Construction Safety Program

(Reference: California Energy Commission Condition of Certification
WS-1 & LG Constructors' Field Safety Instructions Manual)

February 28, 2011

LG Constructors

The Construction Safety Program is LG Constructors' "Field Safety Instructions" manual. See following:

Field Safety Instructions

Prepared for
Los Esteros Critical Energy Facility, LLC
800 Thomas Foon Chew Way
San Jose, CA 95134

LG Constructors™

Los Esteros Critical Energy Facility Phase 2
Site Specific Safety Manual Revision Control

Rev. No.	Rev. Date	Revision Description	Revisions Made By
A	02/10/2011	Issued For Project Management Team Review and Comment	B. Creech

Table of Contents

Acronyms ..... **v**
Definitions ..... **vi**
1.0 Commitment **1**
1.1 LG Constructors **3**
1.1.1 Safe Work Policy 3
1.1.2 Health and Safety Commitment 3
1.2 Project-Specific Health, Safety, and the Environment Goals **4**
2.0 Field Safety Instructions Applicability **5**
2.1 Restricted Areas/Activities & Facility-Specific Requirements **5**
3.0 General Information **6**
3.1 Project Information and Description **6**
3.1.1 Site Description and History 6
3.1.2 Description of Specific Tasks to be Performed by LG Constructors 6
4.0 Project Organization and Responsibilities **7**
4.1 Client **7**
4.2 Project Management Staff **7**
4.2.1 Project Manager 7
4.2.2 Health and Safety Manager 7
4.2.3 Safety Coordinator (Safety Officer) 8
4.2.4 Subcontractor Safety Responsibilities 10
4.2.5 Employee Responsibilities 10
4.2.6 Employee Authority 11
4.3 LG Constructors Subcontractors **11**
4.3.1 Subcontractor List 11
4.4 Client Contractors **12**
4.4.1 Contractors 12
5.0 Project Filing System **14**
6.0 Standards of Conduct **16**
6.1 Standards of Conduct Violations **16**
6.2 Intolerable Offenses **16**
6.3 Enforcement and Discipline **17**
6.3.1 Intolerable Offenses 17
6.3.2 Other Violations 17
6.4 Subcontractor Default **17**
6.4.1 Stop Work Orders 17
6.5 Incentive Program **18**
7.0 Reporting Unsafe Conditions or Practices **19**
7.1 Safety Suggestion Boxes **20**
8.0 Drug-Free Workplace Program **21**
8.1 Drug-Free Workplace **21**
8.1.1 Policy Statement 21
8.1.2 Subcontractor Management 21
8.1.3 Drug and Alcohol Testing 22

8.1.4 Prescription and Non-Prescription Drugs 23
8.2 Types of Testing 23
8.2.1 General Requirements 23
8.2.2 Pre-Hire and Pre-Assignment Testing 23
8.2.3 Post-Incident Testing 23
8.2.4 Cause or Reasonable Suspicion Testing 23
8.2.5 Rehabilitation Follow-Up Testing 24
8.2.6 Retesting 24
8.2.7 Notification of Results 24
8.2.8 Searches and Inspections 24
8.3 Disciplinary Actions 25
8.4 Drug Program Service Provider 25
8.4.1 Laboratory Providing Drug Screen Analysis 25
8.5 Employee Education 25
9.0 Planning 26
9.1 Task Hazard Analysis 26
9.1.1 General Information 26
9.1.2 Tasks Requiring Task Hazard Analyses 26
9.1.3 Detailed Task Hazard Analysis Procedures 27
9.1.4 Task Hazard Analysis Planning Tools 27
9.2 Safety Pre-Task Planning 28
9.3 Safe Behavior Observation Program 29
10.0 Hazard Controls 42
10.1 Project-Specific Safety Hazards and Controls 42
10.1.1 Concrete and Masonry 42
10.1.2 Confined Space Entry Activities 43
10.1.3 Electrical 44
10.1.4 Ground Fault Circuit Interrupters (GFCI) 44
10.1.5 Electrical Equipment Inspections 45
10.1.6 Lockout/Tagout 49
10.1.7 Excavation Entry 49
10.1.8 Excavation Activities 50
10.1.9 Fall Protection Activities 51
10.1.10 Fire Prevention 52
10.1.11 General Practices and Housekeeping 52
10.1.12 Lifting 53
10.1.13 Digging 53
10.1.14 Office Ergonomics & Safety 54
10.1.15 Slips, Trips, and Falls 55
10.1.16 Steel Erection 55
10.1.17 Work In Roadway 57
10.1.18 Welding and Cutting (with Compressed Gas Cylinders) 58
10.1.19 Working Alone 59
10.2 Equipment Hazards 60
10.2.1 Aerial Lifts 60
10.2.2 Compressed Gas Cylinders 61

10.2.3 Crane Operations and Requirements 61
10.2.4. Earthmoving Equipment (Operating Heavy Equipment) 68
10.2.5 Forklifts 70
10.2.6 Gas Powered Sump Pumps and Generators 71
10.2.7 Hand and Power Tools 71
10.2.8 Lasers 72
10.2.9 All Terrain Vehicles (ATVs) 72
10.2.10 Scaffolds 73
10.2.11 Stairways and Ladders 74
10.2.12 Respiratory Protection 75
10.3 Hazard Communication Program 76
10.3.1 Chemical Hazards 80
10.3.2 Bloodborne Pathogens 80
10.3.3 Hexavalent Chromium (Cr VI) Exposure 82
10.4 Outdoor Exposures 83
10.4.1 Heat Stress 83
10.4.2 Cold Stress 84
10.4.3 Ultraviolet Radiation/Sun Exposure 85
11.0 Personal Protective Equipment 87
11.1 General Information 87
11.2 Hazard Assessment 87
11.3 Training 89
12.0 Safety Inspections 90
13.0 Safety Training 92
13.1 LG Constructors Employee Training 92
13.2 Project Employee Orientation 92
13.3 Safety Meetings (Toolbox/Mass Safety Meetings) 92
13.4 Safety Pre-Task Planning and Training 92
13.5 Vendor Training 92
13.6 Emergency Response Plan Training 93
13.7 Training Documentation 93
14.0 Safety Committee 94
15.0 Incident Reporting, Investigation and Management 95
15.1 Scope and Application 95
15.2 Definitions 95
15.3 Verbal Notification 95
15.4 Hours and Incidents Tracking System 96
15.5 Injury Management 96
15.6 Investigation 96
15.7 Incident Root Cause Analysis 97
15.7.1 Personal Factors 97
15.7.2 Job Factors 97
15.8 Corrective Actions 98
16.0 Emergency Preparedness 99
16.1 Pre-Emergency Planning 99

16.2 Emergency Equipment and Supplies **100**
16.3 Emergency Response **100**
16.4 Evacuation Procedures **100**
16.5 Emergency Medical Treatment **101**
16.6 Emergency Notification Flow Chart **102**
16.7 Emergency Preparedness Training **108**
17.0 Approval **109**
17.1 Original Plan **109**
17.2 Revisions **109**

Attachment 1 ..... **110**
Attachment 2 ..... **112**
Attachment 3 ..... **178**
Attachment 4 ..... **198**
Attachment 5 ..... **203**
Attachment 6 ..... **205**
Attachment 7 ..... **210**
Attachment 8 ..... **212**
Attachment 9 ..... **214**

Acronyms

APC	Alternative Procedure Certificate
CPR	Cardiopulmonary Resuscitation
CSEP	Confined Space Entry Permit
ERP	Emergency Response Plan
FSI	Field Safety Instruction
GC	Gas Chromatography
GFCI	Ground Fault Circuit Interrupter
HIV	Human Immunodeficiency Virus
HS&E	Health, Safety and the Environment
HSM	Regional Health and Safety Manager (LG Constructors)
IDLH	Immediately Dangerous to Life and Health
IRF	Incident Report Form
kV	Kilovolt
LEL	Lower Exposure Limit
mg/m^3	Milligram per Cubic Meter
MRO	Medical Review Officer
MS	Mass Spectrometry
MSDS	Material Safety Data Sheet
NIOSH	National Institute for Occupational Safety and Health
NPC	Nonpermit Certificate
OSHA	Occupational Safety and Health Administration
PCB	Polychloronated biphenyl
PEL	Permissible Exposure Limit
PIM	Potentially Infectious Material
PM	Project Manager
PPE	Personal Protective Equipment
PPM	Parts Per Million
PRCS	Permit Required Confined Space
REL	Recommended Exposure Level
RMSF	Rocky Mountain Spotted Fever
SC	Safety Coordinator – Construction
SO_2	Sulfur Dioxide
SOP	Standards of Practice
SPTP	Safety Pre-Task Planning
THA	Task Hazard Analysis
TLV	Threshold Limit Value
TWA	Time-Weighted Average
UL	Underwriters Laboratories, Inc.

Definitions

The following definitions define words as they are used in this document.

Subcontractor - Subcontractor in this document refers to subcontractors and/or subconsultants directly contracted with or employed by LG Constructors. Subcontractor includes contractors or subcontractors employed by those contractors.

LG Constructors – Includes all employees from LG Constructors, subcontractors, subconsultants, and guests who will be working on or visiting the project site.

Third Parties – Third parties include third party contractors, their workers, their subcontractors, their visitors, or any other persons not under the direct control or custody of LG Constructors.

FSI – FSI are Field Safety Instructions, which define the procedures and requirements for the health and safety of LG Constructors staff and visitors, public, and anyone else under the custody of LG Constructors when they are physically on the construction site.

Project Site – The project site is the area defined in the contract documents as comprising the area for construction.

HS&E Requirements – HS&E are the health, safety, and environment requirements set forth by this document.

Imminent Danger Situation – An imminent danger situation is defined as that which is immediately life threatening or would cause serious injury.

1.0 Commitment

LG Constructors

HSSE Target Zero World-Class Performance

Health, Safety, Security, and Environment Policy

Protection of people and the environment is a LG Constructors core value. It is our vision to create a culture within LG Constructors that empowers employees to drive this value into all global operations and achieve excellence in health, safety, security, and environment (HSSE) performance. LG Constructors deploys an integrated, enterprise-wide behavior-based HSSE management system to fulfill our mission and the expectations of our clients, staff, and communities based on the following principles:

- We require all management and supervisory personnel to provide the leadership and resources to inspire and empower our employees to take responsibility for their actions and for the actions of their fellow employees to create a safe, healthy, secure, and environmentally-responsible workplace.
- We provide value to clients by tailoring HSSE processes to customer needs and requiring all LG Constructors employees and subcontractors to deliver projects with agility, personal service, and responsiveness and in compliance with HSSE requirements and company standards to achieve health, safety, security, and pollution prevention excellence. Our performance will aspire to influence others and continually redefine world-class HSSE excellence.
- We systematically evaluate our design engineering and physical work environment to verify safe and secure work conditions and practices are established, consistently followed, and timely corrected.
- We continually assess and improve our HSSE program to achieve and maintain world-class performance by setting and reviewing objectives and targets, reporting performance metrics, and routinely reviewing our progress.
- We care about the safety and security of every LG Constructors employee and expect all employees to embrace our culture, share our core value for the protection of people and the environment, understand their obligations, actively participate, take responsibility, and "walk the talk" on and off the job.

The undersigned pledge our leadership, commitment, and accountability for making this policy a reality at LG Constructors.

The undersigned pledge our leadership, commitment, and accountability for making this policy a reality at CH2M HILL.

Dated the 1st day of October 2009.

Lee A. McIntire
Chief Executive Officer

Garry Higdem
President, Energy Division

Jacqueline Rast
President, Major Programs Group

Robert C. Allen
Chief Human Resources Officer

Mark Lasswell
President, Transportation Business Group

Catherine Santee
Chief Financial Officer

Bob Card
President, Facilities & Infrastructure Division

Margaret McLean
Chief Legal Officer

Thomas G. Searle
President, International Division

Bill Dehn
Senior Vice President, Special Projects

Michael E. McKelvy
President, Government, Environment, and Nuclear Division

Nancy R. Tuor
Vice-Chair, International

Keith Christopher
Senior Vice President, Health, Safety, Security, and Environment

LG Constructors

SAFETY POLICY STATEMENT

Safety is our primary strategic objective and the first consideration on this project. We share the belief that all incidents are preventable, and are committed to making this belief a reality at LG Constructors.

LG Constructors considers its employees to be our most valuable asset and, therefore, the prevention of work-related injuries and illnesses will receive precedence over all other activities. It is LG Constructors policy to provide a safe and healthful working environment by implementing work practices that will safeguard employees, Los Esteros Critical Energy employees and facilities, subcontractors, vendors, visitors, and the general public.

Safety is everyone's responsibility. Safety requires individual participation from all levels of the organization. All levels of management are responsible for providing the leadership, resources and support necessary to maintain a safe and healthful work environment. Employees are responsible for working in a manner that will not endanger themselves or their co-workers.

LG Constructors is committed to safety excellence and an injury-free working environment. The same commitment is expected from our employees, subcontractors and vendors.

Donald Zabilansky
President
Power Business Group

Jim Williams
Project Manager
Power Business Group

Bryon Creech
Safety Director
Power Business Group

1.1 LG Constructors

1.1.1 Safe Work Policy

It is the policy of LG Constructors to perform work in the safest manner possible. Safety must never be compromised. To fulfill the requirements of this policy, an organized and effective safety program must be carried out at each location where work is performed.

LG Constructors believes that all injuries are preventable, and we are dedicated to the goal of a safe work environment. To achieve this goal, every employee on the project must assume responsibility for safety.

Every employee is empowered to:

- Conduct their work in a safe manner
- Stop work immediately to correct any unsafe condition that is encountered
- Take corrective actions so that work may proceed in a safe manner

Safety, occupational health, and environmental protection will not be sacrificed for production. These elements are integrated into quality control, cost reduction, and job performance, and are crucial to our success.

1.1.2 Health and Safety Commitment

LG Constructors has embraced a philosophy for health and safety excellence. The primary driving force behind this commitment to health and safety is simple: employees are LG Constructors most significant asset and LG Constructors management values their safety, health, and welfare. Also, top management believes that all injuries are preventable. LG Constructors safety culture empowers employees at all levels to accept ownership for safety and take whatever actions are necessary to eliminate injury. Our company is committed to world-class performance in health and safety and also understands that world-class performance in health and safety is a critical element in overall business success.

LG Constructors is committed to the prevention of personal injuries, occupational illnesses, and damage to equipment and property in all of its operations; to the protection of the general public whenever it comes in contact with the Company's work; and to the prevention of pollution and environmental degradation.

Company management, field supervisors, and employees plan safety into each work task in order to prevent occupational injuries and illnesses. The ultimate success of LG Constructions safety program depends on the full cooperation and participation of each employee.

LG Constructors will exceed safety standards as we work to be a model in our industry. LG Constructors management extends its full commitment to health and safety excellence.

1.2 Project-Specific Health, Safety, and the Environment Goals

All management and employees are to strive to meet the project-specific Health, Safety, and the Environment (HS&E) goals outlined below. The team will be successful only if everyone makes a concerted effort to accomplish these goals. The goals allow the project to stay focused on optimizing the health and safety of all project personnel and, therefore, making the project a great success.

The Project has established eleven specific goals and objectives:

- Create an injury-free environment
- Have zero injuries or incidents
- Provide management leadership for HS&E by communicating performance expectations, reviewing and tracking performance, and leading by example
- Ensure effective implementation of the Field Safety Instructions (FSIs) through education, delegation, and team work
- Ensure 100 percent participation in training programs, Personal Protective Equipment (PPE) use, and HS&E compliance
- Continuously improve our safety performance
- Maintain free and open lines of communication
- Make a personal commitment to safety as a value
- Focus safety improvements on high-risk groups
- Continue strong employee involvement initiatives
- Achieve health and safety excellence

2.0 Field Safety Instructions Applicability

These FSIs apply to:

- All LG Constructors staff, including subcontractors and tiered subcontractors of LG Constructors working on the project site.
- All visitors to the project site in the custody of LG Constructors (including visitors from the Client, the Government, the public, and other staff of any LG Constructors company)

These FSIs do not apply to the third-party contractors, their workers, their subcontractors, their visitors, or any other persons not under the direct control or custody of LG Constructors. These FSIs define the procedures and requirements for the health and safety of LG Constructors staff and visitors when they are physically on the project site. The project site includes the project area (as defined by the contract documents) and the project offices, trailers, and facilities thereon.

These FSIs will be kept onsite during field activities and will be reviewed as necessary. The FSIs will be amended or revised as project activities or conditions change or when supplemental information becomes available. The FSIs adopt, by reference and as appropriate, the Standards of Practice (SOPs) in the LG Constructors Corporate Health and Safety Program. In addition, these FSIs may adopt procedures from the project Work Plan and any other governing regulations. If there is a contradiction between these FSIs and any governing regulation, the more stringent and protective requirement shall apply.

All LG Constructors staff and subcontractor supervisors must sign the employee sign-off form included in this document as Attachment 1 to acknowledge review and receipt of this document. Copies of the signature page will be maintained onsite by the Safety Coordinator (SC).

2.1 Restricted Areas/Activities & Facility-Specific Requirements

Contact the Responsible Health and Safety Manager for assistance with areas or activities that are not covered by these instructions. Examples include:

- Construction/Demolition zones
- Confined spaces
- Excavations
- Barricaded areas (unless with prior approval from facility representative)
- Exposed energized electrical equipment (unless accompanied by qualified individual)
- Areas where there is an unprotected (e.g., no guardrail) fall exposure greater than 4’
- Areas exposed to vehicular traffic
- Areas where health hazards exist above action levels (such as Asbestos, Lead)
- Activities requiring respiratory protection
- Use of personal protective equipment that personnel have not been trained to use
- Activities requiring the use of scaffolding, aerial lifts or hoisted personal platforms

3.0 General Information

3.1 Project Information and Description

Project Number:	417531
Client Name:	Los Esteros Critical Energy Facility, LLC
Project Name and Address:	Los Esteros Critical Energy Facility Phase 2 800 Thomas Foon Chew Way San Jose, CA 95134-1100
LG Constructors Project Manager:	Jim Williams
LG Constructors Construction Manager:	Dwight Hartman
LG Constructors Office:	Denver
Date (FSI) Prepared:	2/14/2011
Dates of Site Work:	May 2011 – May 2013

3.1.1 Site Description and History

The Los Esteros Critical Energy Facility was constructed in 2003 and 2004 as a simple cycle facility. It was planned to be "built-out" as a combined cycle facility and much of the original infrastructure is sized and arranged for built-out.

3.1.2 Description of Specific Tasks to be Performed by LG Constructors.

EPC build out of combined cycle power plant. Work includes:

- Major excavations for STG, Cooling Tower and Circulation Water Piping
- Foundations for new equipment
- Extension of existing underground utilities
- Demolition of existing HRSG shells
- Installation of new HRSGs (4 each), STG, pumps, chemical feed equipment, etc.
- Add new level to existing pipe rack and extend to STG
- New Warehouse Building
- Above ground piping and electrical for new systems
- DCS upgrade
- Startup and commissioning new systems

4.0 Project Organization and Responsibilities

4.1 Client

Los Esteros Critical Energy Facility, LLC

4.2 Project Management Staff

4.2.1 Project Manager

Jim Williams
Project Manager

The LG Constructors project manager (PM) is responsible for providing adequate resources (budget and staff) for project-specific implementation of the HS&E management process. The PM has overall management responsibility for the tasks listed below. The PM may explicitly delegate specific tasks to other staff, as described in sections that follow, but retains ultimate responsibility for completion of the following in accordance with this document:

- Incorporate standard terms and conditions, and contract-specific HS&E roles and responsibilities in contract and subcontract agreements (including flow-down requirements to lower-tier subcontractors)
- Select safe and competent subcontractors
- Obtain, review, and accept or reject subcontractor pre-qualification questionnaires
- Ensure that acceptable certificates of insurance, including LG Constructors as named additional insured, are secured as a condition of subcontract award
- Incorporate HS&E information in subcontract agreements, and ensure that appropriate site-specific safety procedures, training, and medical monitoring records are reviewed and accepted prior to the start of subcontractor's field operations
- Maintain copies of subcontracts and subcontractor certificates of insurance (including LG Constructors as named additional insured), bond, contractor's license, training and medical monitoring records, and site-specific safety procedures in the project file accessible to site personnel
- Provide full-time oversight of subcontractor HS&E practices per the site-specific safety plan
- Manage the site and interface with third parties in a manner consistent with our contract and subcontract agreements and the applicable standard of reasonable care
- Ensure that the overall, job-specific HS&E goals are fully and continuously implemented

4.2.2 Health and Safety Manager

Name: Bryon Creech
Job Title: HSSE Safety Director – LG Constructors Power Business Group

LG Constructors Office: Charlotte, NC
Telephone: Number: 704-607-7249
Cellular: Number: 704-607-7249

The LG Constructors HS&E manager is responsible to:

- Review and accept or reject subcontractor pre-qualification questionnaires
- Review and accept or reject subcontractor training records and site-specific safety procedures prior to start of subcontractor's field operations
- Support the SC's oversight of subcontractor (and lower-tier subcontractors) HS&E practices and interfaces with onsite third parties per the site-specific safety plan
- Visit the project monthly to assess site conditions and review HS&E program implementation
- Assist with program implementation as needed

4.2.3 Safety Coordinator (Safety Officer)

Jim Petriella
SC Info

The SC shall be onsite for the duration of construction activity and is responsible to:

- Make safety integral to each operation by promoting worker involvement in the work planning and hazard identification process
- Maintain active and visible involvement using open communication with employees regarding safety items on the project
- Review and understand contractual obligations regarding HS&E
- Manage the site and interface with third parties in a manner consistent with our contract agreements and the applicable standard of reasonable care
- Verify these FSI are current and amended when project activities or conditions change
- Implement Drug-Free Workplace Policy
- Verify LG Constructors site personnel and subcontractor supervision read these FSI and sign the Employee Signoff Form in Attachment 1 prior to commencing field activities
- Verify and document that LG Constructors team members have completed any required specialty training (e.g., fall protection, confined space entry) and medical surveillance.
- Assure that the workforce is trained and qualified
- Conduct an HS&E orientation for all LG Constructors team members prior to entering the project work areas
- Verify compliance with the requirements of these FSI and applicable contractor health and safety plan(s) and any federal, state, and local regulations

- Act as the project "Hazard Communication Coordinator" and perform the responsibilities outlined in the FSI
- Act as the project "Emergency Response Coordinator" and perform the responsibilities outlined in the FSI
- Post required information onsite. The OSHA job-site poster is required at sites where project field offices, trailers, or equipment-storage boxes are established; posters can be obtained by calling 800/548-4776 or 800/999-9111
- Verify that safety meetings are conducted and documented in the project file as needed throughout the course of the project (e.g., as tasks or hazards change)
- Verify that a safety committee is formed and active on the project. The members of the committee should consist of one representative from each craft and one representative from each subcontractor
- Verify that project health and safety forms and permits are being used as outlined in the FSI
- Perform assessments of contractor HS&E practices per the site-specific safety plan and verify that project activity self-assessment checklists are being used by LG Constructors team members. Provide weekly HS&E project reports to the Regional Health and Safety Manager (HSM).
- Verify that project files available to site personnel include copies of executed contracts and certificates of insurance (including LG Constructors as named additional insured), bond, contractors license, training and medical monitoring records, and site-specific safety procedures prior to start of subcontractor's field operations
- Coordinate with the HS&E manager regarding LG Constructors and subcontractor operational performance, and third party interfaces
- Verify appropriate PPE use, availability, and training
- Conduct safety briefings weekly for LG Constructors team members and subcontractor supervisors
- Notify HSM of injuries and follow up on injured employee's progress
- Conduct accident investigations including root cause analysis
- Maintain HS&E records and documentation
- Facilitate Occupational Safety and Health Administration (OSHA) or other government agency inspections including accompanying inspector and providing all necessary documentation and follow-up
- Deliver field HS&E training as needed based on project-specific hazards and activities
- Ensure that programs are effectively functioning to prevent and control hazards on the project

4.2.4 Subcontractor Safety Responsibilities

Subcontractors must comply with the following activities, and are responsible to:

- Comply with all local, state, and federal safety standards
- Comply with project and owner safety requirements
- Actively participate in the project safety program and attend all required safety meetings
- Provide a qualified and approve (by LG Constructors) safety representative to conduct and document weekly safety inspections for your work
- Maintain a first aid kit onsite
- Maintain and replace safety protection systems damaged or removed by the subcontractor's operations
- Notify the SC of any accident, injury, and/or incident **immediately** and submit reports to LG Constructors within 24 hours
- Install contractually required general conditions for safety (example: handrail, fencing, fall protection systems, floor opening covers, etc.)
- Conduct and document weekly safety inspections of project-specific tasks and associated work areas
- Conduct weekly employee safety toolbox meetings and copy LG Constructors
- Send all subcontract employees through the site specific safety orientation before work starts

4.2.5 Employee Responsibilities

All personnel are assigned responsibility for safe and healthy operations. This concept is the foundation for involving all employees in identifying hazards and providing solutions. For any operation, individuals have full authority to stop work and initiate immediate corrective action or control. In addition, each worker has a right and responsibility to report unsafe conditions/practices. This right represents a significant facet of worker empowerment and program ownership. Through shared values and a belief that all accidents are preventable, our employees accept personal responsibility for working safely.

Each employee is responsible for the following performance objectives:

- Perform work in a safe manner and produce quality results
- Perform work in accordance with company policies, and report injuries, illnesses, and unsafe conditions
- Complete work without injury, illness, or property damage
- Report all incidents immediately to supervisor
- Report all hazardous conditions and/or hazardous activities immediately to supervisor for corrective action

- Complete an HS&E orientation prior to being authorized to enter the project work areas

4.2.6 Employee Authority

Each employee on the project has the obligation and authority to shut down any perceived unsafe work and during employee orientation, each employee will be informed of their authority to do so.

4.3 LG Constructors Subcontractors

(Reference LG Constructors SOP HSE-215, *Contracts, Subcontracts, and HS&E Management Practices*)

4.3.1 Subcontractor List

Subcontractor	Scope

The subcontractors listed above are covered by this FSI and must be provided a copy of this document. If subcontractors have specific hazards associated with their type of work that are not covered by this FSI, the subcontractors are responsible to submit the procedures (JSA) to cover these hazards to LG Constructors for review before the start of field work. Subcontractors must comply with the established health and safety plan(s) of the project. The LG Constructors SC should verify that subcontractor employee training, medical clearance, and fit test records are current and must monitor and enforce compliance with the established plan(s). LG Constructors oversight does not relieve subcontractors of their responsibility for effective implementation and compliance with the established plan(s).

LG Constructors team members should continuously endeavor to observe subcontractors' safety performance. This endeavor should be reasonable, and include observation of hazards or unsafe practices that are both readily observable and occur in common work areas. LG Constructors is not responsible for exhaustive observation for hazards and unsafe practices. In addition to this level of observation, the SC is responsible for confirming LG Constructors subcontractor performance against both the subcontractor's task specific safety procedures and applicable self-assessment checklists. Self-assessment checklists, provided in this document in Attachment 2, are to be used by the SC to review performance.

Health and safety-related communications with LG Constructors subcontractors should be conducted as follows:

- Brief subcontractors and employees on the provisions of this plan, and require them to sign the Employee Signoff Form, included in Attachment 1

- Request subcontractor(s) to brief project team on the hazards and precautions related to their work
- When apparent, non-compliance/unsafe conditions or practices are observed, notify the subcontractor safety representative and require corrective action—the subcontractor is responsible for determining and implementing necessary controls and corrective actions
- When repeat non-compliance/unsafe conditions are observed, notify the subcontractor safety representative and stop affected work until adequate corrective measures are implemented
- When an apparent imminent danger exists, immediately remove all affected personnel, notify subcontractor safety representative, stop affected work until adequate corrective measures are implemented, and notify the Project Manager, HS&E Manager, and SC as appropriate
- Document all verbal health and safety-related communications in project field logbook, daily reports, or other records

4.4 Client Contractors

4.4.1 Contractors

(Reference LG Constructors SOP HSE-215, *Contracts, Subcontracts and HS&E Management Practices*)

These instructions do not cover contractors that are contracted directly to the client or the owner. LG Constructors is not responsible for the health and safety or means and methods of the contractor's work, and we must never assume such responsibility through our actions (e.g., advising on health and safety issues). In addition to these instructions, LG Constructors team members should review contractor safety plans so that we remain aware of appropriate precautions that apply to us. Self-assessment checklists, contained in Attachment 2, are to be used by the SC and LG Constructors team members to review the contractor's performance ONLY as it pertains to evaluating our exposure and safety. The HSM is the only person who is authorized to comment on or approve contractor safety procedures.

Health and safety-related communications with contractors should be conducted as follows:

- Request the contractor to brief LG Constructors team members on the precautions related to the contractor's work
- When an apparent contractor non-compliance/unsafe condition or practice poses a risk to LG Constructors team members:
  - Notify the contractor safety representative
  - Request that the contractor determine and implement corrective actions
  - If necessary, stop affected LG Constructors work until contractor corrects the condition or practice
  - Notify the client, Project Manager, and HS&E Manager as appropriate

- If apparent contractor non-compliance/unsafe conditions or practices are observed, inform the contractor safety representative (LG Constructors obligation is limited strictly to informing the contractor of the observation—the contractor is solely responsible for determining and implementing necessary controls and corrective actions)
- If an apparent imminent danger is observed, immediately warn the contractor employee(s) in danger and notify the contractor safety representative (LG Constructors obligation is limited strictly to immediately warning the affected individual(s) and informing the contractor of the observation—the contractor is solely responsible for determining and implementing necessary controls and corrective actions)
- Document all verbal health and safety-related communications in project field logbook, daily reports, or other records

5.0 Project Filing System

An organized project filing system is essential for good documentation and recordkeeping. There are many benefits to an organized filing system:

- Other LG Constructors employees can easily and quickly find documents
- Records are readily available for review
- Records may be needed during OSHA investigations, audits, or other legal matters
- Records may be needed on short notice in case of an accident, illness or other emergency
- Systematic recordkeeping aids in overall project organization

The project filing system shall be established at the beginning of the project and maintained throughout all phases of construction. The information contained in the filing system shall be updated regularly and/or as specified in this document. The PM and SC are responsible for collecting documentation and maintaining a complete and organized filing system. The following information must be identified and organized in the following manner:

1 Safety Planning

- 1.1 Safety Pre-Task Plan
- 1.2 Task Hazard Analysis
- 1.3 Crane Pick Plans
- 1.4 Excavation Work
  - 1.4.1 Excavation Entry Checklists
  - 1.4.2 Excavation Planning Checklist
- 1.5 Hot Work Permits
- 1.6 Confined Space Entry Permits

2 Verification & Follow-Up

- 2.1 Drug Testing Verification
- 2.2 Jobsite Inspections (subcontractors)
- 2.3 Self-Assessment Checklists
- 2.4 Daily Observation Log
- 2.5 Heavy Equipment Checklists
- 2.6 Program Reviews
  - 2.6.1 Program Review Reports
  - 2.6.2 Program Review Completed Audit Findings Tables
  - 2.6.3 *Outside Inspections (Subs, Govt., Consultation, Insurance)*
  - 2.6.4 *Outside Inspections Follow Up*
- 2.7 Incidents
  - 2.7.1 Incident Log
  - 2.7.2 Incident Investigation Reports
  - 2.7.3 OSHA 300 logs
- 2.8 Crane Certifications
- 2.9 Disciplinary Actions
- 2.10 Stop Work Orders

3 Employee Empowerment

- 3.1 Recognition Actions
- 3.2 Safety Committee
- 3.3 Safety Suggestions

3.4 Observed Hazard Forms

4 Education and Training

4.1 Project Orientation
- 4.1.1 Project Orientation Logs

4.2 Toolbox Talk Meetings
4.3 Mass Safety Meetings
4.4 FSI Acknowledgment
4.5 Training Certifications *(Competent Person, OSHA 10, Heavy Equipment, CPR/FA)*
4.6 Chemical Hazard Communication
- 4.6.1 HazCom Inventory List
- 4.6.2 HazCom Material Safety Data Sheets
- 4.6.3 HazCom Chemical Specific Training

4.7 Emergency Drills

5 Preconstruction

5.1 Subcontractor Prequalification Packages
5.2 Subcontractor Site Safety Plans
5.3 Preconstruction Meeting Minutes

6.0 Standards of Conduct

All individuals associated with this project must work injury-free and drug-free and must comply with the following Standards of Conduct, the Site Safety Plan, and the safety requirements of LG Constructors. Commonly accepted standards of conduct help maintain good relationships between people. They promote responsibility and self-development. Misunderstandings, frictions, and disciplinary action can be avoided by refraining from thoughtless or wrongful acts.

6.1 Standards of Conduct Violations

All individuals associated with this project are expected to behave in a professional manner. Violations of the standards of conduct would include, but not be limited to:

- Failure to perform work
- Inefficient performance, incompetence, or neglect of work
- Willful refusal to perform work as directed (insubordination)
- Negligence in observing safety regulations, poor housekeeping, or failure to report on-the-job injuries or unsafe conditions
- Unexcused or excessive absence or tardiness
- Unwillingness or inability to work in harmony with others
- Discourtesy, irritation, friction, or other conduct that creates disharmony
- Harassment or discrimination against another individual
- Failure to be prepared for work by wearing the appropriate construction clothing or bringing the necessary tools
- Violation of any other commonly accepted reasonable rule of responsible personal conduct

6.2 Intolerable Offenses

Certain employee conduct may be so intolerable as to justify removal from the project. Intolerable offenses and actions will include, but will not be limited to, the following:

- Any manager, supervisor, foreman or other person in charge of the work being performed who requires, requests, asks, threatens with their job, allows, or condones employees to work in or around unsafe acts or conditions
- Any employee, supervisor, or manager who knowingly falsifies any investigative documents or testimony involving an investigation
- Any employee, supervisor, or manager who openly exhibits disregard, defiance, or disrespect for the safety program
- Any employee who violates established safety rules, regulations, or codes that endanger themselves or other employees

- Any and all parties involved in workplace violence, including physical encounters (fighting) or threats of violence, theft, or destruction of property
- Any employee working more than 6 feet (1.8 m) above the next lowest level not implementing proper fall protective system criteria and practices outlined in the Site Safety Plan and/or OSHA 29 CFR 1926, Subpart M
- Any employee, supervisor, or manager failing to comply with procedures contained in the subcontract, Site Safety Plan, or any and all federal, state, or local safety laws and regulations that create the potential for serious or costly consequences
- Any employee who commits repeated minor offenses and shows a lack of responsible effort to correct these offenses

6.3 Enforcement and Discipline

LG Constructors Enforcement and Discipline procedures, the Standards of Conduct, the Intolerable Offenses, and the Drug-Free Workplace policy will be thoroughly reviewed with each employee during the employee project orientation.

6.3.1 Intolerable Offenses

LG Constructors practices zero tolerance for intolerable offenses. Those individuals found participating in such offenses will be:

- Suspended from work for 3 days without pay, or
- Immediately discharged and not allowed to return

6.3.2 Other Violations

Other violations, as outlined in the Standards of Conduct, will be handled accordingly:

- First Offense – Employee will receive a written warning
- Second Offense – Employee will receive a 2-day suspension without pay
- Third Offense – Employee will be discharged

6.4 Subcontractor Default

6.4.1 Stop Work Orders

If subcontractor fails to comply with any of the requirements of the subcontract, Site Safety Plan, or any and all federal, state, or local safety laws and regulations, LG Constructors may issue a stop work order to subcontractor. Thereupon, subcontractor shall immediately cease all work or portion of work that may be specifically designated in the stop work order until LG Constructors has concluded in writing that the subcontractor has corrected its failure of performance. No adjustments will be made to the subcontractor price or schedule as a result of any stop work orders being issued by LG Constructors. A Stop Work Order Form, included in this document as Attachment 7, will be completed by LG Constructors and a copy will be given to the noncompliant subcontractor on the date of deficiency. If subcontractor fails to correct the deficiencies noted in the Stop Work Order within three working days following the written notice from LG Constructors, LG Constructors may, without prejudice to any other rights or remedies under the subcontract or at law or equity, suspend all further payments to subcontractor and/or terminate subcontractor's right to continue performance of the work.

6.5 Incentive Program

LG Constructors will implement a safety incentive program for the Project that rewards workers for exhibiting exemplary safety behaviors. Actions that qualify are those that go above and beyond what is expected, like wearing your own safety equipment, seatbelt, etc. Actions that will be rewarded include spotting and correcting a hazard, bringing a hazard to the attention of your foreman, telling your foreman about an incident, coming up with a safer way to get the work done, stopping a crew member from doing something unsafe, etc. The program will operate throughout the project, covering all craft workers. The incentive program will be communicated to all employees during the project employee orientation and project safety meetings.

7.0 Reporting Unsafe Conditions or Practices

Responsibility for effective health and safety management extends to all levels of the project and requires good communication between employees, supervisors, and management. Accident prevention requires a pro-active policy on near misses, close calls, unsafe conditions, and unsafe practices. All personnel must report any situation, practice, or condition which might jeopardize the safety of our projects. All unsafe conditions or unsafe practices will be corrected immediately. LG Constructors has zero tolerance of unsafe conditions or unsafe practices.

No employee or supervisor will be disciplined for reporting unsafe conditions or practices. Individuals involved in reporting the unsafe conditions or practices will remain anonymous. In addition to the following reporting procedures, employees can also call the Project Phone Number to anonymously report project health and safety concerns.

The following reporting procedures will be followed by all project employees:

1. Upon detection of any unsafe condition or practice, the responsible employee will attempt to safely correct the condition.

2. The unsafe condition or practice will be brought to the attention of the worker's direct supervisor, unless the unsafe condition or practice involves the employee's direct supervisor. If so, the SC needs to be notified at once by the responsible employee.

Either the responsible employee or responsible employee's direct supervisor is responsible for immediately reporting the unsafe condition or practice to the SC.

The SC will act promptly to correct the unsafe condition or practice.

Details of the incident or situation will be recorded by the SC in the Observed Hazard Form, included in this document as Attachment 8.

The Observed Hazard Form, Attachment 8, will be reviewed by the project safety committee for further action and analysis.

If a responsible employee feels that they have been mistreated by any project personnel throughout the process of reporting/correcting an unsafe condition or practice, they will report this complaint to the LG Constructors Safety Coordinator or the Project Manager.

Again, LG Constructors policy allows for zero tolerance of unsafe conditions or unsafe practices.

7.1 Safety Suggestion Boxes

LG Constructors will have safety suggestion boxes located at conveniently accessible areas for all project employees. The purpose of the safety suggestion box is to give the employees another opportunity to anonymously make comments or make suggestions to help improve site safety. The suggestions will be read aloud at the weekly safety meeting and reviewed by the project safety committee. Efforts to improve or correct the employee concern will be documented on the Observed Hazard Form, Attachment 8, and all employees will be notified of the project corrective actions during the weekly safety meeting.

8.0 Drug-Free Workplace Program

8.1 Drug-Free Workplace

LG Constructors does not tolerate illegal drugs, or any use of drugs, controlled substances, or alcohol that impairs an employee's work performance or behavior. LG Constructors has established a policy that its employees and subcontractors shall not be involved in any manner with the unlawful manufacture, distribution, dispensation, possession, sale, or use of illegal drugs in the workplace. The use or possession of alcohol in the workplace is also prohibited. Any violation of these prohibitions may result in discipline or immediate discharge. Please reference LG Constructors SOP HSE-105, *Drug-Free Workplace Standard of Practice*, for more information. The following sections describe mandatory program requirements.

8.1.1 Policy Statement

A policy statement is required for the Drug-Free Workplace Program. The policy statement should detail prohibited conduct and ramifications, and:

- Prohibit drug, alcohol, and/or controlled substances use or abuse
- Prohibit involvement in the manufacture, distribution, dispensation, possession, sale, or use of illegal drugs in the workplace
- Describe disciplinary actions
- Stipulate that subcontractor shall pay for all testing

8.1.2 Subcontractor Management

All lower-tiered subcontractors must comply with the provisions of this program.

Testing is to be conducted for the substances listed in section 8.1.3 of this document or LG Constructors SOP 105 at a Substance Abuse and Mental Health Services Administration (SAMHSA)-certified facility that is monitored by the Department of Health and Human Services (DHHS). Pre-assignment and random testing will only entail drug testing, while post incident and for cause or reasonable suspicion testing must include both drug and alcohol testing. Employees who refuse to submit to drug or alcohol testing will be treated as if they tested positive.

If a subcontractor's employee has a confirmed positive test result, the subcontractor is required to notify LG Constructors of test result within 24 hours and provide notification that the employee has been removed from the site. Employees testing positive will be removed from the LG Constructors project and not allowed to return for a minimum of six months, and then only upon providing a negative drug screen result.

Subcontractor is responsible for maintaining their own records. LG Constructors requires that the subcontractor submit the names of their employees who have confirmed negative test results on company letterhead, certifying that the employees have met the Drug-Free Workplace Program requirements. The submitted document must list employee name, location of test, date, and type of test (i.e. 10-panel, 7-panel, 5-panel). LG Constructors reserves the right to audit the subcontractor's program and records at any time.

Site visitors are not required to be drug tested but must be escorted by someone who has been tested. Site visitors are employees who visit a site for a day or less and who are accompanied by a site manager/supervisor. Site visitors are employees who observe the project and are not exposed to significant HS&E hazards. The SC-C must be involved in determining whether an employee is considered a site visitor.

8.1.3 Drug and Alcohol Testing

Testing will be conducted for all substances listed below. If the results exceed the level list, a confirmation sample will be conducted with a gas chromatography/mass spectrometry (GC/MS). If the GC/MS levels exceed those listed, the results will be reported to the Medical Review Officer (MRO).

Drug and Alcohol Panel Screening and Confirmation Levels

Substance	Screening Threshold Level (EMIT)	Confirmation Threshold Level (GC/MS)
Amphetamines	1000 ng/ml	500 ng/ml
Cocaine Metabolite	300 ng/ml	150 ng/ml
Opiates	2000 ng/ml	2000 ng/ml
Phenylcyclidine (PCP)	25 ng/ml	25 ng/ml
Marijuana (THC)	50 ng/ml	15 ng/ml
Alcohol, Ethyl	0.02 gm/dl	0.04 gm/dl

Alcohol testing will be performed in accordance with the FMCSA Alcohol & Drug Testing Regulations using breath alcohol testing equipment and procedures. Two alcohol tests are required to determine if a person has a prohibited alcohol concentration. A screening test is conducted first, with any result less than 0.02 gm/dl considered a "negative" result. If the alcohol concentration is greater than 0.02 gm/dl, a second confirmation test must be conducted. Confirmation breath alcohol tests greater than 0.04 gm/dl are considered a "positive" result.

Only a Breath Alcohol Technician (BAT) may be used for breath alcohol testing, unless applicable state licensing or other requirements mandate blood tests or unless testing facilities

are not available for breath sampling. When blood alcohol testing is used, each presumptive positive result must be confirmed by a second analysis using a GC/MS.

8.1.4 Prescription and Non-Prescription Drugs

Employees using prescription or non-prescription drugs that could impair their functions on the project are required to notify the employer in advance of such drug use.

Failure to report prescription and non-prescription drugs as required above, illegally obtaining the substance, or use that is inconsistent with the prescription or label may be subject to disciplinary action.

8.2 Types of Testing

8.2.1 General Requirements

Pre-hire, pre-assignment testing will only entail drug testing, while all other types of testing must include drug and alcohol testing.

Employees who refuse to submit to drug or alcohol testing will be treated as if they tested positive and will be disciplined accordingly.

Prior to drug or alcohol testing, the employee must sign a consent form. Copies of this form must be maintained on file. The subcontractor will maintain for their employees and LG Constructors for their employees.

A candidate will be eliminated from employment consideration for tampering with, altering, or attempting to create a false negative result.

8.2.2 Pre-Hire and Pre-Assignment Testing

Employees working on the project are required to submit to a pre-assignment test for drugs. The test must be taken within 30 days prior to the employee's arrival date at the project.

A positive test for a potential new hire or existing employee will result in eliminating the person for consideration for assignment to the project.

Applicants and existing employees who do not successfully pass the drug test may be reconsidered for assignment to the project after 6 months.

8.2.3 Post-Incident Testing

At a minimum, post-incident testing is required following an incident on the project that results in an injury in the course of employment requiring treatment from a doctor, or following an incident that results in property damage over US $5,000.

Post-incident testing may be required under other circumstances as dictated by the PM, HSM, SC-C, the Drug Program Administrator, or LG Constructors. Post-incident testing will include both drug and alcohol testing.

8.2.4 Cause or Reasonable Suspicion Testing

When the company or LG Constructors believe there is cause for reasonable suspicion that an employee has taken drugs or consumed alcohol while at work or returned to duty with drugs or

alcohol in their body, the employee will be required to immediately submit to drug and/or alcohol tests.

The Project Manager and the LG Constructors Power Business group Safety Director must approve "for cause" or "reasonable suspicion" testing prior to requiring an employee to submit to the test.

The subcontractor must maintain written documentation that supports the need for reasonable suspicion testing.

Employees who are required to submit to reasonable suspicion testing must submit to the test immediately after the determination has been made. Employees are prohibited from transporting themselves to the collection site.

For cause testing will include both drug and alcohol testing.

8.2.5 Rehabilitation Follow-Up Testing

If an employee enters a rehabilitation program, they will be subject to periodic testing for a period of up to 2 years upon their return to work. The company will follow the MRO-recommended frequency for all follow-up testing.

8.2.6 Retesting

A dilute sample will be immediately retested. The employee's supervisor must escort the employee to the collection site for resampling.

The employee must be required to submit to the escorted test without prior warning.

A refusal to retest under these conditions will be considered a positive result and will be disciplined accordingly.

8.2.7 Notification of Results

Positive test results must be reported to LG Constructors with 24 hours of notification from laboratory.

Employee's drug screen result must be kept confidential. Only company individuals with a work-related need to know will be given the results

8.2.8 Searches and Inspections

The subcontractor and LG Constructors must be able to conduct searches of project locations (vehicles, lockers, desks, filing cabinets, or equipment owned or being operated by subcontractor personnel) and employee's personal property (briefcases, purses, backpacks, coats, or vehicles). Employees and their property will be searched by local law enforcement.

LG Constructors must be notified prior to conducting a search.

Employees must sign a search consent and documentation form prior to having a search conducted of the employee's personal property. The subcontractor is responsible for maintaining this form which will also document findings of the search.

A refusal to submit to, or cooperate with a search, will result in immediate removal from the project site.

8.3 Disciplinary Actions

Employees who test positive for drugs or alcohol will be immediately removed from the project.

The company will determine appropriate action, including the level of discipline which includes actions ranging from providing an opportunity for entry into a rehabilitation or counseling program to suspension or dismissal.

8.4 Drug Program Service Provider

Positive and/or inconclusive drug screen results must be reviewed by a licensed MRO.

The laboratory providing drug screen analysis must meet all federal, state, and local licensing requirements to provide drug screen analysis.

8.4.1 Laboratory Providing Drug Screen Analysis

The following local laboratory provides drug screen analysis:

Laboratory Name: To be announce at a later Date
Street Address
City, State, Zip

Hours: Hours of operation
Name: Contact name
Phone: Number

Directions to Laboratory

Directions to Laboratory

8.5 Employee Education

Employees and supervisors must be provided with a drug-free workplace program and an alcohol education awareness program.

9.0 Planning

9.1 Task Hazard Analysis

9.1.1 General Information

Task Hazard Analysis (THAs) (Attachment 4 - BBLPS Forms) may be required depending on the scope of work activities and the hazards associated with those activities. A THA is a procedure which integrates accepted health and safety principles and practices into a particular operation. In a THA, each basic step of the overall task is examined to identify potential hazards and to determine the safest way to do the job.

Four basic stages in conducting a THA are:

- selecting the task to be analyzed
- breaking the task down into a sequence of steps
- identifying potential hazards
- determining preventive measures to overcome these hazards

THAs are intended to be a starting point and must be reviewed (and modified as appropriate) by the entire work team prior to initially conducting the task.

The THA process will identify previously undetected hazards and increase the job knowledge of those participating. Safety and health awareness is raised, communication between workers and supervisors is improved, and acceptance of safe work procedures is promoted. The completed THA will be the basis for regular contact between supervisors and workers on health and safety. It will serve as a teaching aid for initial job training. The THA will also be used as a standard for health and safety observations and it will assist in completing comprehensive accident investigations.

All THAs will be documented and submitted to the SC and will be maintained onsite.

9.1.2 Tasks Requiring Task Hazard Analyses

Task Hazard Analyses (Attachment4 – BBLPS Forms) are required for all definable work tasks. The following hazardous work operations are *examples* of those requiring THAs.

- Aerial Lifts
- Concrete and Masonry
- Confined Space Entry
- Crane-Suspended Personnel Platforms
- Cranes, Hoists, and Rigging
- Demolition
- Drilling
- Earthmoving Equipment
- Electrical Lockout/Safety

- Excavations
- Fall Protection
- Hand and Power Tools
- Respiratory Protection
- Scaffolds
- Steel Erection
- Welding and Cutting

9.1.3 Detailed Task Hazard Analysis Procedures

To complete a detailed THA form, the responsible supervisor obtains a THA form and identifies individuals who will be performing the task. With the assistance of those employees performing the task, the responsible supervisor should:

- Define the task and describe the work activity, including the tools, equipment, materials, and personnel to perform the activity
- Identify the sequence of work or principle steps that are required to perform the activity
- Identify and analyze the chemical, physical, safety, and biological/environmental hazards posed by each step in the activity
- Identify the main hazard control measures for each hazard identified—hazard control measures shall follow the hierarchy of 1) implementing engineering control, 2) instituting safe work practices, and 3) providing PPE
- List equipment, tools, and materials that will be used to perform the activity, along with the equipment/tool inspection and training requirements for workers and supervisors
- Ensure employees have training qualifications necessary to perform their assigned duties and job functions
- Identify and summarize relevant SOPs, as part of the hazard control measure identified for each work task
- Review the THA form in a safety briefing with all project personnel who will be performing the task prior to task performance (*Ensure that their signature is on the THA form*)
- Brief any new members to the crew prior to performing the task
- Verify that the control measures recommended are implemented during execution of the work by assigning responsibilities to the appropriate team members

The responsible supervisor must review all THAs with all project personnel who will be performing the task in a safety briefing, prior to task performance. Any new crew members shall be briefed on the THA prior to performing the activity. In addition, the responsible supervisor shall oversee subcontractor implementation of this THA process for their work.

9.1.4 Task Hazard Analysis Planning Tools

The following are planning tools that shall be utilized when preparing detailed THAs.

9.1.4.1 Task Hazard Analysis Table

The THA Table (Attachment 4 – BBLPS Forms), details potential health and safety hazards for each project phase or task. Relevant safety procedures must be reviewed to identify the applicable hazard control procedures in the THA.

9.1.4.2 Subcontractor Activity Specific Safety Procedures

Subcontractor Activity-Specific Safety Procedures are not intended to be all-inclusive, but are provided as a tool to facilitate development and review of safe work procedures. Subcontractors are expected to address each outlined criteria as part of their THA planning.

9.1.4.3 Project-Activity Self-Assessment Checklists

Project Activity Self-Assessment Checklists (Attachment 2), have been provided as a method of verifying compliance with established safe work practices, regulations, and industry standards pertaining to various activities. Project activity self-assessments shall be performed at the start of specific hazardous work activity, then at least weekly and at intervals appropriate for the nature of work site activities. Checklists provided in Attachment 2 are for LG Constructors employee use only. Each subcontractor shall provide their own checklists to be used to assess the adequacy of site-specific safety requirements and determine if control measures identified in the THA are adequate for each work task.

9.2 Safety Pre-Task Planning

The Pre-Task Plan (PTP) (Attachment 4) is the process used by each foreman to effectively conduct safety planning at the start of each shift and for each new task performed throughout the shift.

There are seven basic steps in performing a PTP:

- A description of the task or activity to be performed.
- Providing answers to a list of questions to make a work area evaluation.
- Completing a checklist containing potential hazards that may be encountered.
- Listing all PPE that will be required to complete the task.
- Breaking the task down into a sequence of steps.
- Identifying the hazards associated with each step.
- The required actions to eliminate or control the hazards.

Supervisors can eliminate potential problems only by ensuring that every worker thoroughly understands each task that they are to perform. The PTP process is LG Constructors chosen form of communicating the nature of each task to the worker, ensuring that each worker is aware of the associated hazards, and fully understands how to perform the work safely.

While completion of the PTP is a foreman responsibility, worker involvement is strongly recommended. The foreman shall review the PTP with each member of the work crew and

crew-members will sign-off verifying that they have read and understand the information contained in the completed PTP.

The foreman shall post a copy of the completed PTP in the immediate work area. The PTP will be revised as necessary to reflect changes to the work plan or work methods used.

The project management team will audit completed PTP's throughout the shift and, if necessary, have revisions made to enhance the quality of the plan. Positive re-enforcement should be given to recognize crews for developing PTP's that are well developed and address potential safety hazards effectively.

At the end of each shift, all completed PTP's will be submitted to LG Constructors Project Safety Manager for final review and filing.

The Safety Department will conduct foreman's training sessions as necessary to enable foreman to understand the PTP process and use it effectively.

9.3 Safe Behavior Observation Program

To identify and provide recognition related to safe and "at-risk" behaviors, evaluate the effectiveness of pre-task safety planning, develop and use leading safety indicators to prevent incidents.

Scope

Applies to all LG Constructors construction projects.

Responsibilities

Site Manager
The senior on-site manager is responsible for assuring compliance with all elements of this procedure.

Supervisors
Each member of the project management team with field related duties is responsible for participating in the Safe Behavior Observation Program by performing at minimum three safe behavior observations (SBO) weekly. LG Constructors management personnel visiting each project will also conduct at minimum one SBO per visit.

Safety Manager
The safety manager is responsible for assisting site management in the effective implementation of this procedure, conducting required training for observers, providing awareness level orientation to all project employees, assisting project management in the maintenance of documentation and reports, and conducting periodic audits to verify full compliance.

Employees
Employees are responsible for following the safe work practices contained in this procedure and notifying their supervisor of any safety concerns.

Subcontractors
Subcontractor management is responsible for participating in the Safe Behavior Observation Program as directed by LG Constructors senior on-site manager.

General
The Safe Behavior Observation process enables trained personnel to observe workers in order to identify safe and “at-risk” behavior; discuss the observations with the crew and receive feedback from the workers about the observation. The observation process allows an observer to view a job without being involved in it. The observer is not there to "catch" anyone doing something wrong, but simply to watch, listen, and provide feedback. Injuries occur if “at-risk” behaviors are repeated. The observation process is designed to encourage safe behaviors until they become an every-day habit. Observations are systematic and standardized to sample behavior, not individuals.

The program is non-disciplinary in nature. No one is singled out and the names of those observed are not entered on the SBO form. Each observer is responsible for implementing corrective action with respect to “at-risk” behaviors and conditions that they observe during the SBO activity.

Leading indicator graphs and reports are published weekly to communicate safe and “at-risk” trends, provide early identification of areas needing improvement, and maintain general safety awareness at an optimum level.

A goal for “Percent Safe” has been established and is reflected in all graphs and reports providing “Percent Safe” safety performance. (Refer to the latest electronic version of the Current Safety Letter titled Safe Behavior Observation Program for percent safe goals)

Safe Behavior Observation Card (SBO)
The SBO card provides list of behaviors and conditions that observers will be looking for during the observation activity. When a behavior or condition is noted, the observer checks either "safe" or “at-risk" on the SBO card. The observer reviews each of the categories representing behaviors and conditions and looks for ways that the workers can be hurt or how an accident could happen. When the observation is completed the observer communicates any “at-risk” behaviors to the affected worker or crew, and if possible, those safe behaviors identified, completes the SBO form and turns it in to project management for review and input into the tracking application.

Training
Observers shall receive the training necessary to perform safe behavior observations effectively and in compliance with this procedure. It is recommended that observers receive OSHA 10 hour training and any additional task specific training necessary to effectively recognize the safe work practices and conditions associated with the work being performed.

Observation Procedures

The observation process is accomplished by watching crewmembers as they perform an assigned task.

The observer shall:

- Go to a work area where a task is being performed.
- Inform the workers you will be performing an SBO.
- Observe the employees work and use the SBO form for guidance.
- Look for "at-risk" behaviors or unsafe conditions that present a potential for injury.
- Look around the work area for obvious hazards that the crew may not have considered.
- Use the SBO checklist to note both safe and "at-risk" behaviors or conditions present.
- Provide detail for each "at-risk" behavior or condition observed in the section provided.
- Place a check or X in the N/O (Not Observed) box for each hazard category not applicable to the task being performed or not observed during this SBO.
- Review the crew's Pre-Task Plan (PTP) and complete the PTP Audit section of the SBO form.
- Have the foreman and crew make necessary revisions to the PTP.
- Provide feedback, positive and negative, to the work crew.
- Complete all sections of the SBO form.
- Turn in the completed SBO for data collection and follow-up.

Use this chart for a sample observation procedure:

Step	Reminder
Pick a time for the observation	Perform at least three SBO's per week
Obtain a SBO form	Keep some forms at all times
Tell workers an observation will be conducted	Be friendly and cooperative
Show workers the form	Let them review it but do not interrupt work
Complete the form	Stay out of the way, but look and listen for the activities listed on the SBO
Discuss observations with workers	Tell them the positive behavior first and then discuss the "at-risk" behavior
Get feedback from the crew and	Record their concerns on the SBO.

answer any questions they may have.	
Turn in the SBO to project management	Ensure form is complete

Conducting Quality Observations

It is important that each observer fully understands the SBO process and be prepared to use it effectively.

It is not easy being an objective observer. This will take practice. Observers should constantly remind themselves to note what behaviors are actually occurring. The observer should focus on both safe and "at-risk" behaviors and conditions. Remember that a crew will be on its best behavior when being observed. Those safe behaviors will eventually become habit.

The observer's role is as follows:

- Set a good example – be a role model for safety
- Keep observations within the agreed timeframe
- Have the SBO card ready and know the definitions
- Be able to explain the program and the process
- Understand how the observations are scored
- Be respectful, positive, and avoid arguments
- "Catch" people doing something right
- Show people what you are doing

Good Observer	
Do's	**Don'ts**
Write down comments offered	Argue about what they did or did not do
Share observations in a positive manner with the crew	Place blame or criticize
Engage in problem solving with the crew	Act like an expert or safety specialist
Encourage and invite questions	Get angry
Discuss areas of concern	Make comparisons to other observations

Some Additional Observation Tips

- Be able to explain the program
- Have prior knowledge of the job being observed
- Treat workers with respect
- Do not preach or lecture to workers
- Avoid arguments at all cost
- Show the crew members the SBO form
- Focus on behaviors, tasks, and specific actions
- Focus on the positive aspect of what the crew is doing, then discuss improvements
- If a work process is not understood by the observer, ask the crew to explain it
- Write any comments on the SBO form that crew members discuss
- If a worker is performing an "at-risk" behavior or if an unsafe condition is observed, address the situation with the worker and immediate supervisor to ensure prompt corrective action

Obstacles to Safe Behavior

Most individuals work "at-risk" because there is some type of obstacle in their way. An obstacle may be lack of proper tools, equipment, or knowledge. Perhaps the employee has learned to do it that way and feels that his or her safety is not "at-risk". An observer can do the following:

- Discover the true obstacles preventing the employee from working safely.
- Discuss with the employee ways to eliminate the obstacle
- "Sell" the philosophy that there is value in doing the job safely
- Record the observation and obstacle on the SBO form for project management review

Interaction Skills

Good interpersonal and communication skills are necessary to be able to talk to people about safety related behaviors. Negative statements may offend some people; so explaining "at-risk" behavior in a positive manner is certainly preferable.

Some employees will resist this process because it is new and introduces the unknown. The culture may be disrupted and existing methods will need to be changed, so expect some resistance. Behavior changes slowly.

Feedback

Feedback is the process of discussing the observations with the crew. Here are a few reminders:

- Positive feedback is very important
- Always discuss positive behaviors first, then go into the "at-risk" behavior
- Be a good listener

- Always say “at-risk" behavior and not "unsafe" behavior
- Ask the worker to explain the “at-risk” behavior that he exhibited
- Practice giving feedback that is positive and constructive

Documentation and Reports
LG Constructors has developed a web application to produce various leading safety indicator reports and graphs based on the SBO card data collected by observers at each project. The full potential of the Safe Behavior Observation process cannot be realized unless safe and “at-risk behaviors and pre-task safety planning audit findings are documented. Trends shall be identified and communicated weekly to all project contractors and employees.

The following actions will assure that the required documentation and reporting associated with the SBO program is in place:

- Observers shall return all completed SBO cards to the project safety manager or designated safety representative for review
- The individual(s) designated will input card data into the safety application
- On a weekly basis, graphs and reports will be generated and reviewed by site management. Available reports include, but are not limited to the following:
  - Percent Safe Graphs by total project and contractor
  - PPE % Safe Graphs by total project and contractor
  - “At-Risk” Behaviors Below Goal for project and contractor
  - PTP Compliance Audit for project and contractor
  - Observer Participation Reports by contractor and observer.
- SBO graphs and reports should be posted in visible locations to communicate safe and “at-risk” behavior performance and generally, to maintain safety awareness at an optimum level.
- SBO graphs and reports should be used as a topic of discussion at safety meetings, weekly contractor progress meetings, and toolbox meetings. Special attention should be given to those behaviors identified below goal, but successes should also be celebrated.

Safe Behavior Observation (SBO) Card Completion Guide

General Information

Complete the top section of the form by providing the project name, the observer’s name, the date and time, LG Constructors or contractor that is being observed, the number of employees observed, and the specific work location where this observation is being conducted.

Behaviors and/or Conditions

- Eye/Face PPE
  - ✓ Is the appropriate eye and face protection worn for the task being performed?
  - ✓ Is the eye/face protection appropriate for the risk?
  - ✓ Is the equipment in good condition?

- ✓ Is the equipment being worn as designed?

- Foot PPE
  - ✓ Is the appropriate foot protection worn for the job?
  - ✓ Is the foot protection appropriate for the risk?
  - ✓ Is the foot protection in good condition?
  - ✓ Is the foot protection worn correctly and as designed?

- Hand/Arm PPE
  - ✓ Is the appropriate hand protection worn for the task being performed?
  - ✓ Are the gloves in good condition?
  - ✓ Is arm protection appropriate for the task being performed?

- Head PPE
  - ✓ Is the appropriate head protection worn for the task being performed?
  - ✓ Is the head protection in good condition?
  - ✓ Is it being worn as designed?

- Hearing PPE
  - ✓ Is hearing protection worn in high noise areas?
  - ✓ Is hearing protection appropriate for the risk?
  - ✓ Is the equipment in good condition and clean?
  - ✓ Is the equipment worn correctly and as designed?

- Respiratory PPE
  - ✓ Is the appropriate respiratory protection worn for the job?
  - ✓ Are the respirators appropriate for the risk?
  - ✓ Is the equipment in good condition and worn as designed?
  - ✓ Is the worker properly trained in the use of respiratory protection equipment?
  - ✓ Has the worker been medically qualified to use a respirator?
  - ✓ Is the worker clean-shaven if using a respirator?

- Fall Protection PPE
  - ✓ Is a body harness worn when work is done over 6 feet in height?
  - ✓ Is the lanyard properly attached to a secure anchorage?
  - ✓ Is the harness and lanyard in good condition?
  - ✓ Does the harness fit correctly?
  - ✓ Has the worker been trained on the proper use of fall protection equipment?
  - ✓ Have the body harness and lanyard been inspected within the last month?

- Mobile Equipment
  - ✓ Has the proper mobile equipment been selected for the job?
  - ✓ Is the mobile equipment in good working order and free from obvious defects?
  - ✓ Is the mobile equipment free of non-approved modifications?
  - ✓ Is the worker operating the mobile equipment qualified?
  - ✓ Is the mobile equipment used as it was designed?
  - ✓ Has the mobile equipment been inspected prior to use?

- Electrical/GFCI
  - ✓ Are all cord sets and electrical tools used protected by GFCI's?
  - ✓ Are all electrical cords in good condition and free of any damage to the insulation.
  - ✓ Is the ground prong firmly attached?
  - ✓ Is the lighting in the area sufficient to safely perform the task?
- Lockout/Tagout (LOTO)
  - ✓ Is the equipment worked on in an energy-free state?
  - ✓ Is the source of electrical energy isolated and locked out when working on electrical equipment?
  - ✓ Is the source of pressurized fluids and gases isolated, locked out, and lines depressurized before opening lines?
  - ✓ Has a lock and tag been placed on all energy isolating points?
  - ✓ Has the system been rendered and verified inoperable and appropriately locked and tagged?
  - ✓ Has the system been mechanically tested prior to commencing work?
  - ✓ Have all affected employees performing work under lockout/tagout been trained?
- Work Permits
  - ✓ Have the appropriate work permits been obtained for the task?
  - ✓ Does the work permit contain all required signatures?
  - ✓ Is the crew following all permit requirements?
  - ✓ Are work permits readily available for review?
- Excavations
  - ✓ Is the excavation inspected daily by a competent person?
  - ✓ Is sloping or shoring adequate?
  - ✓ Is proper access provided?
  - ✓ Is this a confined space?
  - ✓ Is the excavation properly barricaded?
  - ✓ Are spoils at least two feet from edge?
  - ✓ Is the excavation free of standing water?
- Manual Lifting
  - ✓ Does the worker use the legs and keep the back straight?
  - ✓ Is the worker bending at the knees?
  - ✓ Is the load held close to the body?
  - ✓ Is the weight of the load known?
  - ✓ Is the load too heavy to lift without assistance?
- Ladders
  - ✓ Is the right ladder for the task used?
  - ✓ Is the ladder in good conditions and free of defects?
  - ✓ Is the ladder being used properly?
  - ✓ Are straight ladders secured?
  - ✓ Do ladders used for access extend at least three feet above the landing?
  - ✓ Are stepladders fully extended and locked into position?

- Scaffolds
  - ✓ Is the scaffold erected by a competent person?
  - ✓ Is it inspected daily by a competent person?
  - ✓ Is proper access provided?
  - ✓ Are guardrails and toeboards in place?
  - ✓ Is it tagged?
- Body Positioning
  - ✓ Does the worker place all parts of their body so that it will not be contacted, sprayed, or struck by an energy release of any kind?
  - ✓ Does the worker keep body parts and clothing away from moving or stationary parts that are closing or may close together?
  - ✓ Does the worker avoid placing their hands into blind areas?
  - ✓ Does the worker keep his or her eyes on the task and avoid distractions?
- Aerial Lifts
  - ✓ Are all aerial lifts used (boom and scissors) inspected prior to use?
  - ✓ Has the employee been trained and is verification of training on file?
  - ✓ Are workers using aerial lifts using a body harness and lanyard?
  - ✓ Are workers avoiding possible pinch points?
  - ✓ Are surface conditions in the immediate area safe for aerial lift use?
  - ✓ Is the aerial lift load including workers and materials within load capacity?
  - ✓ Do workers remain on the platform floor during use?
- Barricading
  - ✓ Are barricades and warnings in place to prevent entry into temporary hazards?
  - ✓ Are barricades around permanent hazards effective and maintained in good condition?
  - ✓ Is the proper type of barricade used?
  - ✓ Does barricading include the name and LG Constructors individual responsible?
  - ✓ Is the correct color of barricade tape used to protect personnel from the hazard present?
- Slip/Trip/Fall
  - ✓ Is the surface from which the worker is performing a task stable, level, solid, and provide good traction?
  - ✓ Does the worker use the walkway provided for access to the work area and avoid short cuts, uneven, or slippery surfaces?
  - ✓ Is the walkway and work area free of cords and hoses?
- Rigging
  - ✓ Is rigging in good condition?
  - ✓ Is rigging appropriate for the load to be lifted?
  - ✓ Has a documented inspection of all rigging been conducted within the last month?

- Confined Space
  - ✓ Has the confined space been prepared for entry according to the Confined Space Entry Permit?
  - ✓ Is the permit posted at the confined space?
  - ✓ Has the atmosphere been tested?
  - ✓ Is the worker wearing appropriate PPE?
  - ✓ Is entry/rescue equipment present and in good working condition?
  - ✓ Is the confined space attendant in place at the point of entry and in communication with entrants and emergency personnel?
  - ✓ Has everyone involved in the entry been properly trained?
- Tools in Use
  - ✓ Has the worker selected the proper tool for the task?
  - ✓ Are hand tools clean and free of obvious defects and in good working order with no damage?
  - ✓ Are hand tools free of non-approved modifications?
  - ✓ Is the worker using the tool as it was designed to be used?
  - ✓ Are fire extinguishers available if required?
- Housekeeping
  - ✓ Is the work area free of debris and loose objects?
  - ✓ Does the worker maintain the workspace in a neat and orderly condition?
  - ✓ Does the worker place equipment, tools, supplies, and materials to avoid creating clutter or obstructions in the work area?
  - ✓ Does the worker clean and organize the work area before departing?

PTP Audit

- Good PTP
  - ✓ Does the completed PTP effectively address the hazards associated with the task being performed?
  - ✓ Have all sections of the PTP been completed?
- Inadequate PTP
  - ✓ Have significant hazards been overlooked and not identified and addressed in the PTP?
  - ✓ Are there some sections of the PTP that have not been completed?
  - ✓ Is this PTP appropriate for the task being performed?
- No PTP
  - ✓ Did the foreman and crew fail to complete a PTP for this task?
- PTP Not Audited
  - ✓ Was the PTP not reviewed during this observation?
- Work Area Evaluation Completed
  - ✓ Is the Evaluating Your Work Area section of the PTP completed?
  - ✓ Do the Yes or No responses correspond with the nature of the task being performed?

- Potential Hazard Checklist Completed
  - ✓ Is the Potential Hazard Checklist section of the PTP completed?
  - ✓ Do the potential hazards checked correspond to the hazards present for this task?
- Required PPE Listed
  - ✓ Has all required PPE for the task identified in this section?
- Steps to Complete Task Identified
  - ✓ Are the major work steps listed in this section?
  - ✓ Are any significant work steps not listed?
- Hazards for Steps Identified
  - ✓ Has the foreman listed all significant hazards in this section?
  - ✓ Do they correspond with the work step breakdown?
- Identified Hazards Adequately Mitigated
  - ✓ Has the foreman listed the required actions to eliminate or control the hazards that have been identified?
  - ✓ Can you think of any other actions that the foreman and crew can take to safely execute the assigned task?
- Appropriately Signed
  - ✓ Has the PTP been signed by all members of the work crew?
- PTP is Posted
  - ✓ Is the completed PTP posted in the work area?
  - ✓ Did you have any difficulty in locating the PTP?
- PTP is Followed
  - ✓ Is the crew performing the task in accordance with the PTP?
  - ✓ Does the PTP need to be revised to address any hazards not identified during its development?

List "at-risk" Behaviors Observed/Other Comments

- Provide additional detail on all "at-risk behaviors or PTP deficiencies observed.
- Include positive comments that are warranted.

Safe Behavior Observation Card (front)

Safe Behavior Observation

Project Name: _____

Observer's Name: _____

Date: _____ Time: _____

Company Observed: _____

Number of Employees Observed: _____

Specific Location: _____

	Safe	At-Risk	N/O		Safe	At-Risk	N/O
Eye/Face PPE	☐	☐	☐	Manual Lifting	☐	☐	☐
Foot PPE	☐	☐	☐	Ladders	☐	☐	☐
Hand/Arm PPE	☐	☐	☐	Scaffolds	☐	☐	☐
Head PPE	☐	☐	☐	Body Positioning	☐	☐	☐
Hearing PPE	☐	☐	☐	Aerial Lifts	☐	☐	☐
Respiratory PPE	☐	☐	☐	Barricading	☐	☐	☐
Fall Protection PPE	☐	☐	☐	Slip/Trip/Fall	☐	☐	☐
Mobile Equipment	☐	☐	☐	Rigging	☐	☐	☐
Electrical/GFCI	☐	☐	☐	Confined Space	☐	☐	☐
Lockout/Tagout	☐	☐	☐	Tools in Use	☐	☐	☐
Work Permits	☐	☐	☐	Housekeeping	☐	☐	☐
Excavations	☐	☐	☐	Other: _____	☐	☐	☐

N/O – Not Observed (Check All That Apply)

Safe Behavior Observation Card (back)

PTP Audit

☐ Good PTP

☐ Inadequate PTP ☐ No PTP ☐ PTP Not Audited

Yes	No	
☐	☐	Work Area Evaluation Completed
☐	☐	Potential Hazard Checklist Completed
☐	☐	Required PPE Listed
☐	☐	Steps to Complete Task Identified
☐	☐	Hazards for Steps Identified
☐	☐	Identified Hazards Adequately Mitigated
☐	☐	Appropriately Signed
☐	☐	PTP is Posted
☐	☐	PTP is Followed
☐	☐	New/Changing Tasks Added to PTP (if applicable)
☐	☐	Other: _____

List At-Risk Behaviors Observed/Other Comments

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

LGF_ C8-9.3-06

10.0 Hazard Controls

This section provides safe work practices and control measures used to reduce or eliminate potential hazards. These practices and controls are to be implemented by the party in control of either the site or the particular hazard. LG Constructors team members and subcontractors must remain aware of the hazards affecting them regardless of who is responsible for controlling the hazards. LG Constructors team members who do not understand any of these provisions should contact the SC for clarification. Each person onsite is required to follow these rules and regulations.

10.1 Project-Specific Safety Hazards and Controls

10.1.1 Concrete and Masonry

- Protruding reinforcing steel (rebar) and form stakes, which personnel could fall onto or into, must be guarded to eliminate the hazard of impalement
- During post-tensioning, only those personnel essential to the operation are permitted behind the tensioning jacks. Signs and barriers shall be erected to limit employee access to the post-tensioning area during post-tensioning operations
- Scaffolds must be erected and dismantled in accordance with regulatory requirements
- Personnel shall not ride in concrete buckets nor position themselves in areas where buckets are lifted overhead
- Personnel shall maintain a safe distance from formwork and shoring being removed from concrete structures
- Personnel shall maintain a safe distance from precast and lift-slab concrete being lifted into position until physically secured
- No employee shall be permitted to work under concrete buckets
- No construction loads shall be placed on a concrete structure unless a person who is qualified in structural design determines that the structure or portion of the structure is capable of supporting the loads
- Formwork shall be designed, fabricated, erected, supported, and maintained so that it will be capable of supporting without failure all vertical and lateral loads that may reasonably be anticipated to be applied to the formwork
- Whenever single-post shores are used one on top of another (tiered), a qualified designer shall prepare the design of the shoring, and an engineer qualified in structural design shall inspect the erected shoring
- All shoring and reshoring equipment shall be inspected prior to erection to determine that the equipment meets the requirements specified in the formwork plans

- Precast concrete wall units, structural framing, and tilt-up wall panels shall be adequately supported to prevent overturning and to prevent collapse until permanent connections are completed
- Form supports and wedges shall be checked during concrete placement to prevent distortion of failure

10.1.2 Confined Space Entry Activities

The following requirements must be met prior to confined space entry:

- Confined space entrants, attendants, and entry supervisors must complete sufficient training to acquire the understanding, knowledge, and skills necessary for the safe performance of the assigned duties
- A Confined Space Entry Permit (CSEP), Alternative Procedure Certificate (APC), or Non-permit Certificate (NPC) must be completed and posted near the space entrance point for review (see Attachment 3 for examples)
- Each confined space entrant and attendant must attend a pre-entry briefing conducted by the entry supervisor
- Each confined space entrant and attendant must verify that the entry supervisor has authorized entry and that all permit or certificate requirements have been satisfied
- Only individuals listed on the Authorization/Accountability Log are permitted to enter the space
- Each confined space entrant and attendant must verify that atmospheric monitoring has been conducted at the frequency specified on the permit or certificate and that monitoring results are documented and within acceptable safe levels
- The HSM must be notified for all permit required confined space (PRCS) work

The following requirements must be met during confined space entry:

- Communication must be maintained between the attendant and entrants to enable the attendant to monitor entrant status
- Entrants must use equipment specified on the permit or certificate accordingly
- All permit or certificate requirements must be followed
- Entrants must evacuate the space upon orders of the attendant or entry supervisor, when an alarm is sounded, or when a prohibited condition or dangerous situation is recognized
- Entrants and attendants must inform the entry supervisor of any hazards confronted or created in the space, or any problems encountered during entry
- The entry supervisor will remain outside the confined space unless the CSEP designates an alternate entry supervisor which would allow the initial entry supervisor to become an authorized entrant.

10.1.3 Electrical

- Only qualified personnel are permitted to work on unprotected energized electrical systems;
- The Energized Electrical Work Permit, Attachment 3, is to be used when work must be performed on energized electrical equipment; the permit will document control measures and specific procedures to be followed when working on energized electrical systems
- Only authorized personnel are permitted to enter high-voltage areas
- Do not tamper with electrical wiring and equipment unless qualified to do so
- All electrical wiring and equipment must be considered energized until lockout/tagout procedures are implemented
- Inspect electrical equipment, power tools, and extension cords for damage prior to use
- Do not use defective electrical equipment; remove from service
- All temporary wiring, including extension cords and electrical power tools, must have ground fault circuit interrupters (GFCIs) installed
- Extension cords must be:
  - Equipped with third-wire grounding
  - Covered, elevated, or protected from damage when passing through work areas
  - Protected from pinching if routed through doorways
  - Not fastened with staples, hung from nails, or suspended with wire
- Electrical power tools and equipment must be effectively grounded or double-insulated and UL approved
- Operate and maintain electric power tools and equipment according to manufacturer's instructions
- Maintain safe clearance distances between overhead power lines and any electrical-conducting material unless the power lines have been de-energized and grounded, or where insulating barriers have been installed to prevent physical contact
- Maintain at least 10 feet (3 m) from overhead power lines for voltages of 50 kV or less, and an additional 0.4 inch (1 cm) for every 1 kV over 50 kV
- Temporary lights shall not be suspended by their electric cord unless designed for suspension
- Lights shall be protected from accidental contact or breakage
- Protect all electrical equipment, tools, switches, and outlets from environmental elements

10.1.4 Ground Fault Circuit Interrupters (GFCI)

LG Constructors has selected Ground Fault Circuit Interrupters as its standard method of protecting employees from the hazards associated with electrical shock.

GFCIs shall be used on all 120-volt, single phase 15 and 20-amphere receptacle outlets, which are not part of the permanent wiring of the building or structure.

Temporary power panels providing 120-volt service shall be equipped with GFCI circuit breakers for optimum personnel protection. The same level of protection is afforded by the use of GFCI receptacles.

In cases where protection afforded by GFCI circuit breakers or GFCI receptacles is not readily available, portable plug-in GFCI's may be used.

GFCFs will be tested by a competent person at least quarterly for proper operation and a record of testing shall be maintained on file identifying the following: make or model, serial number of unit, date of inspection, and inspection results including any defects found and final status.

A GFCI polarity tester shall be used to ensure trip current values and to test any satellite receptacles downstream from the receptacle or breaker containing the GFCI.

10.1.5 Electrical Equipment Inspections

In addition to the requirements concerning GFCI's, periodic inspections shall be conducted to assure the safe condition of small electric hand tools, cord sets, electrically powered shop equipment, light plants and all other temporary electrical circuits.

One or more competent individuals will be designated as inspectors to test equipment. Inspectors will identify existing and predictable hazards in tools, cords, and other pieces of electrical equipment. They will also have the authority to take prompt, corrective measures to eliminate problems found. Any problem equipment, which cannot be repaired immediately, must be removed from service and tagged "Defective - Do Not Use" until repairs are made.

Inspectors shall conduct these tests each month, beginning on or about the 20th of the month and ending by the last day of the month.

The names of designated inspectors should be documented and publicized to all workers so that no one else can attempt to perform the inspection.

Any employee found falsifying a monthly inspection will be terminated immediately.

Each employee using a piece of electrical equipment must perform a visual inspection of the cord set, attachment cap, plug, and receptacle of cord or tool sets, and any tool or equipment connected by cord and plug, except cord and receptacles which are fixed in place and not exposed to damage. Workers should check for deformed or missing conductor and ground pins, insulation damage, and indications of possible internal damage. Damaged equipment will be tagged and removed from service.

The designated inspector shall perform the following on all cord sets, receptacles which are not a part of the permanent wiring of the building or structure, and cord and/or plug-connected equipment required to be grounded:

- Test all equipment grounding conductors for continuity; all conductors shall be electrically continuous.
- Test each receptacle and attachment cap or plug for correct attachment of the equipment grounding conductor. The equipment grounding conductor shall be connected to its proper terminal.

- Inspect all double-insulated tools and equipment for physical damage.

All required tests shall be performed:

- Before first use.
- Before equipment is returned to service following any repairs.
- Before equipment is used after any incident which can be reasonably suspected to have caused damage (when a cord set is run over, for example).
- At intervals not to exceed one month. (Note: Cord sets and receptacles, which are fixed and not exposed to damage, shall be tested at intervals of six months.)

No company shall make available or permit any employee to use any equipment, which has not met the requirements of this procedure.

The test record shall identify each receptacle, cord set, and cord and/or plug connected equipment tool or piece of equipment that passed the test. This record shall be coded by use of tape of different colors. A piece of colored tape will be placed on the end of each plug, receptacle, or tool checked. The current tape color will be changed quarterly.

Four separate and distinct colors will be used for equipment in use. Changing the color every three months will eliminate the possibility of mistaking the color code and will make it easy to spot un-inspected or out-of-date items. A fifth color will be used when a piece of equipment has been tagged for repair.

Any company may, at its discretion, conduct inspections and change colors monthly rather than quarterly. However, such a system will require using tapes of two colors at one time: the quarterly color, plus another different color to indicate the project's own monthly code. In other words, the system may be augmented by a more stringent system at the project level, provided that the primary quarterly color scheme remains consistent.

The subject of employee responsibility for daily inspection will be included in new employee safety orientations and mentioned at least monthly at the tool box safety meeting:

Generators of 5 kw or less which are portable and have a single-phase, two-wire system are exempt from this regulation.

Each company's superintendents (project superintendent, craft superintendent, craft supervisor, etc.) are responsible for ensuring that cords, tools, and other equipment under their control are inspected both daily, by the workers in the crew, and monthly, by the designated inspector.

Color Coding Schemes for Assured Equipment Grounding Conductor Test Record

COLOR CODING SCHEME FOR ASSURED EQUIPMENT GROUNDING CONDUCTOR TEST RECORD

Month or Quarter	Color Coding Scheme	
	Monthly	**Quarterly**
January	White/White	
February	White/Yellow	White
March	White/Blue	
April	Green/Green	
May	Green/Yellow	Green
June	Green/Blue	
July	Red/Red	
August	Red/Yellow	Red
September	Red/Blue	
October	Orange/Orange	
November	Orange/Yellow	Orange
December	Orange/Blue	
Repair or Incident	Brown	Brown

Assured Equipment Grounding Program Log

Month: _____ Year: _____ Color Code: _____ Project Number: _____ Location: _____ Page _____ of _____

Col. #1	*Col. #2*	*Col. #3*	*Col. #4*	*Col. #5*	*Col. #6*	*Col. #7*	*Col. #8*	*Col. #9*	*Col. #10*	*Col. #11*	*Col. #12*
Type or Name of Equipment	**Equipment Identification Number**	**Date of Test**	**Type of Test**	**Condition of Equipment**	**Sent for Repair**	**Date of Retest**	**Condition at Retest**	**Returned to Service**	**Badge # Receiving Equipment**	**Comments**	**Inspector's Name**
		M-D-Y	lm 1 3 6	S/ U	M-D-Y	M-D-Y	S/ U	M-D-Y			

10.1.6 Lockout/Tagout

- Do not work on equipment when the unexpected operation could result in injury, unless lockout/tagout procedures are implemented
- Employees working under a lockout/tagout procedure must complete sufficient training to acquire the understanding, knowledge, and skills necessary for the safe performance of their assigned duties within the plan
- When available from the facility or equipment owner, equipment-specific lockout/tagout procedures shall be followed. When equipment-specific lockout/tagout procedures are not available, or when the existing procedures are determined to be insufficient (such as not addressing all energy sources), then the authorized employee shall be required to develop a procedure specific to the equipment being serviced. LG Constructors authorized employees shall complete Attachment 3, Equipment-Specific Lockout/Tagout Procedure Development Form, to create a equipment-specific lockout/tagout procedure when required.
- Standard lockout/tagout procedures include the following steps:
  - Notify all personnel in the affected area of the lockout/tagout
  - Shut down the equipment using normal operating controls
  - Isolate all energy sources
  - Apply individual lock and tag to each energy isolating device
  - Relieve or restrain all potentially hazardous stored or residual energy
  - Verify that isolation and de-energization of the equipment has been accomplished
  - Once verified that the equipment is at the zero energy state, work may begin
- All safe guards must be put back in place, all affected personnel notified that lockout/tagout has been removed, and controls positioned in the safe mode prior to lockout/tagout removal
- Do not remove another person's lock or tag
- For new construction, equipment and processes should not be energized (electrical, hydraulic, pneumatic etc.) until all required inspections have been completed and all affected personnel on the project are informed.

10.1.7 Excavation Entry

This section applies to all excavation entry regardless of the party in control of the excavation.

Do not enter the excavations unless completely necessary, and only after the excavation competent person has completed their daily inspection and has authorized entry. An inspection shall be conducted by the competent person prior to the start of work, as needed throughout the shift, after every rainstorm, and after any hazard increasing occurrence. Documentation of the inspection must be maintained onsite at all times.

Follow all excavation entry requirements established by the excavation competent person and any excavation permit being used.

Sloping, benching, shoring, shielding, or other protective systems are required to protect personnel from cave-ins except when the excavation is made entirely in stable rock or is less

than 5 feet deep and there is no indication of possible cave-in, as determined by the excavation competent person. Protective systems for excavations deeper than 20 feet must be designed or approved by a registered professional engineer.

Trenches greater than 4 feet deep shall be provided with a ladder, stairway, or ramp positioned so that the maximum lateral travel distance is no more than 25 feet.

Excavations shall not be entered when:

- Protective systems are damaged or unstable.
- Objects or structures above the work location may become unstable and fall into the excavation.
- The potential for a hazardous atmosphere exists, unless the air has been tested and found to be at safe levels.
- Accumulated water exists in the excavation, unless precautions have been taken to prevent excavation cave-in.

The Excavation HSE Self-Assessment Checklist may be used to evaluate excavations prior to entry.

10.1.8 Excavation Activities

- Sloping, benching, shoring, shielding, or other protective systems are required to protect personnel from cave-ins except when the excavation is made entirely in stable rock or is less than 5 feet (1.5 m) deep and there is no indication of possible cave-in, as determined by the excavation competent person
- Cave-in protection is required whenever a worker must have head and chest below grade (for example, cementing pipe joints on hands and knees in a 48-inch (1.2 m) deep utility trench)
- Trenches greater than 4 feet (1.2 m) deep shall be provided with a ladder, stairway, or ramp positioned so that the maximum lateral travel distance is no more than 25 feet (7.6 m).
- Protective systems for excavations deeper than 20 feet (6.0 m)must be designed or approved by a registered professional engineer
- Walkways shall be provided where personnel are required or permitted to cross over excavations. Walkways 6 feet (1.8 m) or more above lower levels shall be equipped with standard guardrails.
- Guardrails, fences, or barricades shall be installed at excavations 6 feet (1.8 m) or deeper when the excavations are not readily visible because of plant growth or other visual obstruction.
- Do not enter the excavations unless completely necessary, and only after the competent person has completed the daily inspection and has authorized entry
- An inspection shall be conducted by the competent person prior to the start of work, as needed throughout the shift, after every rainstorm, and after any hazard increasing occurrence—documentation must be maintained onsite at all times

- When LG Constructors self-performs excavation activities, the Excavation Planning Checklist and Excavation Entry Permit found in Attachment 3 shall be completed and posted at the excavation by the LG Constructors excavation competent person prior to entry. All personnel entering the excavation shall verify that a current permit is completed, authorized, and posted at the excavation location prior to entry.
- Follow all excavation entry requirements established by the competent person
- Do not enter excavations where protective systems are damaged or unstable
- Do not enter excavations where objects or structures above the work location may become unstable and fall into the excavation
- Do not enter excavations with the potential for a hazardous atmosphere until the air has been tested and found to be at safe levels
- Do not enter excavations with accumulated water unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation
- The Self-Assessment Checklist, found in Attachment 2 of this document, is an example of the type of evaluation that shall be used to inspect excavation activity prior to entry

10.1.9 Fall Protection Activities

- Fall protection systems must be used to eliminate fall hazards when performing construction activities at a height of 6 feet (1.8 m) or greater (see Attachment 3, Fall Protection Evaluation Form)
- Walking/working surfaces above or adjacent to dangerous equipment, pickling or galvanizing tanks, degreasing units, and similar hazards, shall be guarded with a standard railing and toeboard.
- Employees exposed to fall hazards must complete training that enables the employee to recognize the hazards of falling and the procedures to be followed in order to minimize these hazards
- The employer shall verify employee training on fall hazards by providing a certificate record of training for the exposed employees
- Employees shall not use fall protection systems on which they have not been trained
- A registered professional engineer shall oversee the use of horizontal lifelines
- Only one person shall be attached to a vertical lifeline at a time
- Remain within the guardrail system when provided
- Leaning over or stepping across a guardrail system is not permitted
- Do not stand on objects (boxes, buckets, bricks, blocks, etc.) or ladders to increase working height on top of platforms protected by guardrails
- Inspect personal fall arrest systems prior to each use

- Do not use damaged fall protection systems at any time, or for any reason
- Set-up personal fall arrest systems so that you can neither free-fall more than 6 feet (1.8 m) nor contact any lower level
- Only attach personal fall arrest systems to anchorage points capable of supporting at least 5,000 pounds (2300 kg)
- Use fall protection equipment for fall protection only and not to hoist materials
- Do not use personal fall arrest systems that have been subjected to impact loading
- Safety monitoring systems can be used only during roofing activities and after the contractor has clearly demonstrated that all other fall protection methods are unfeasible; the HSM must be notified and provided a copy of the THA for review and approval prior to commencing work using a safety monitoring system
- When using a Safety Harness an employee will observe the 100% Fall Protection rule. Two lanyards or a double lanyard will be needed.

10.1.10 Fire Prevention

- A fire extinguisher, rated not less than 2A, shall be provided for each 3,000 square feet (279 m^2) of a combustible building area, or major fraction thereof. Travel distance from any point of the protection area to the nearest fire extinguisher shall not exceed a horizontal distance of 100 feet (30 m)
- When 5 gallons (18 L)or more of a flammable or combustible liquid is being used, an extinguisher must be within 50 feet (15 m)
- Extinguishers must:
  - Be maintained in a fully charged and operable condition
  - Be visually inspected each month
  - Undergo a maintenance check and certification each year
- The area in front of fire extinguishers must be kept clear
- Post “Exit” signs over exiting doors, and post “Fire Extinguisher” signs over extinguisher locations
- Combustible materials stored outside should be at least 10 feet (3 m)from any building
- Solvent waste and oily rags must be kept in a fire resistant, covered container until removed from the site
- Flammable/combustible liquids must be kept in approved containers, and must be stored in an approved storage cabinet

10.1.11 General Practices and Housekeeping

All personnel working or visiting at the project will wear Hi Visibility Vest, Shirts or Jackets depending on weather. Approval to alter from this must come from the Project Manager and the LG Constructors Power BG Safety Director.

- Site work should be performed during daylight hours whenever possible
- Work conducted during hours of darkness requires enough illumination intensity to read a newspaper without difficulty
- Good housekeeping must be maintained at all times in all project work areas
- Common paths of travel should be established and kept free from the accumulation of materials
- Keep access to aisles, exits, ladders, stairways, scaffolding, and emergency equipment free from obstructions
- Provide slip-resistant surfaces, ropes, and/or other devices to be used
- Specific areas should be designated for the proper storage of materials
- Tools, equipment, materials, and supplies shall be stored in an orderly manner
- As work progresses, scrap and unessential materials must be neatly stored or removed from the work area
- Nails from stripping operations shall be removed prior to stacking and bent on material being disposed
- Containers should be provided for collecting trash and other debris and shall be removed at regular intervals
- All spills shall be quickly cleaned up
- Oil and grease shall be cleaned from walking and working surfaces
- Nails and screws shall be removed during concrete stripping operations

10.1.12 Lifting

- Proper lifting techniques must be used when lifting any object:
  - Plan storage and staging to minimize lifting or carrying distances
  - Split heavy loads into smaller loads
  - Use mechanical lifting aids whenever possible
  - Have someone assist with the lift—especially for heavy or awkward loads
  - Make sure the path of travel is clear prior to the lift

10.1.13 Digging

Digging activities have a potential for back injuries. If someone is going to be digging remind them of the proper techniques which include **warming up and stretching before exertion**, using the legs to lift the weight of the full shovel and using your feet to change direction to unload the shovel. Never twist your trunk when you are carrying a load.

10.1.14 Office Ergonomics & Safety

The two biggest areas of concern for office workers are ergonomics and lifting. Ergonomics is the science of fitting workplace conditions and job demands to the working population. Ergonomics is an approach or solution to dealing with a number of problems which include musculoskeletal disorders. It has been shown that performance and quality are improved and injuries and illnesses are reduced when there is a good fit between employees and their workstations.

10.1.14.1 Ergonomic Evaluations and Support

The office safety program includes implementation of an ergonomics program. Corporate HSSE will provide the necessary training, tools, and technical assistance to complete this task.

10.1.14.2 Employees are responsible for:

- Completing the new employee orientation training which contains the ergonomics awareness training module located on LG Constructors Virtual Office within one month of coming to work at LG Constructors.
- Implementing the knowledge gained from the ergonomics awareness training course regarding workstation set-up and safe work practices.
- Setting up their workstation in the most ergonomically correct manner possible, with the tools and equipment available in the workplace.
- Taking breaks from keying, mousing, blackberry use and sedentary work as recommended in the ergonomic awareness training module.
- Implementing all reasonable precautions to prevent an ergonomic injury.
- Notifying their local Ergonomic Evaluator or HSSE staff of any ergonomic issues that may be associated with their workstation.
- The Ergonomics Program has changed beginning January 2009:
- ***Workstation Setup*** – To learn more how to setup your workstation review the Ergonomics Workstation Set Up information on the HSSE site on the VO.
- ***Project Assistance*** – If you are on a project and need ergonomic assistance, contact your Responsible Health & Safety Manager.
- For office workers, go online and perform a self ergonomic evaluation within the first 30 days of working in the office.
- Requesting an ergonomic evaluation, if appropriate, when job duties change, workstation location changes or if experiencing discomfort that may be associated with their workstation set-up, equipment or overexertion.
- Following the guidance provided by the Ergonomic Evaluator, RHSM or occupational physician regarding ergonomic issues and recommendations on work habits and workstation design.
- Providing immediate verbal communication to their direct supervisor regarding any ergonomic injuries or illnesses that may be work-related.
- Once your supervisor has been notified, immediately contacting the Injury Management/Return to Work Program Administrator to report a work-related injury or illness (in the United States or Puerto Rico).

10.1.14.3 Supervisor/PM is responsible for:

- Set up project office spaces with desks, chairs and computer equipment so they promote good ergonomic practices.
- Participating in efforts to educate employees to recognize ergonomic hazards and perform safe work practices.
- Upon notification that an employee may have experienced a work-related ergonomic injury or illness, ensuring that the employee contacts the Injury Management/Return to Work Program Administrator (in the United States or Puerto Rico).
- Completing and submitting an Hours and Incident Tracking System (HITS) Incident Report Form (IRF) for employees under their supervision who have experienced an ergonomic injury.
- For employees sustaining an ergonomic injury or illness, working with the employee, RHSM and the Injury Management/Return-to Work Coordinator to verify that any physician's recommendations for workstation design and work practices are implemented.

10.1.15 Slips, Trips, and Falls

- Institute and maintain good housekeeping practices
- Pick up tools and debris in the work area
- Walk or climb only on equipment and/or surfaces designed for personnel access
- Be aware of poor footing and potential slipping and tripping hazards in the work area

10.1.16 Steel Erection

Safe Work Practices

- All openings in floors, temporary or permanent, shall be completely planked over, guarded, or otherwise protected with secure covers capable of withstanding two times the intended load of personnel, equipment, and materials. Floor covers shall be color-coded or labeled "COVER" or "HOLE."
- The stability of the structure must be evaluated before, during, and after steel erection.
- Tools and hardware must be prevented from falling into work operations on lower levels.
- Employees shall not ride on suspended loads.
- Tag lines shall be used for controlling loads.
- Do not walk under suspended loads.
- The permanent floors shall be installed as the erection of structural members progress, and there shall be not more than eight stories between the erection floor and the uppermost permanent floor, except where the structural integrity is maintained as a result of the design.
- At no time shall there be more than four floors or 48 feet of unfinished bolting or welding above the foundation or uppermost permanently secured floor.
- The derrick or erection floor shall be solidly planked or decked over its entire surface except for access openings. Planking or decking of equivalent strength, shall be of proper thickness

to carry the working load. Planking shall be not less than 2 inches thick full size undressed, and shall be laid tight and secured to prevent movement.

- Where skeleton steel erection is being done, a tightly planked and substantial floor shall be maintained within two stories or 30 feet, whichever is less, below and directly under that portion of each tier of beams on which any work is being performed, except when gathering and stacking temporary floor planks on a lower floor, in preparation for transferring such planks for use on an upper floor.
- When gathering and stacking temporary floor planks, the planks shall be removed successively, working toward the last panel of the temporary floor so that the work is always done from the planked floor.
- When gathering and stacking temporary floor planks from the last panel, the employees assigned to such work shall be protected by full body harness with lanyard attached to a catenary line or other substantial anchorage.
- In the erection of a building having double wood floor construction, the rough flooring shall be completed as the building progresses, including the tier below the one on which floor joists are being installed.
- For single-wood floor or other flooring systems, the floor immediately below the story where the floor joists are being installed shall be kept planked or decked over.
- Wood planking shall be of proper thickness to carry the working load, but shall be not less than 2 inches thick full-size undressed, exterior grade plywood, at least 3/4-inch thick, or equivalent material.
- Metal decking of sufficient strength shall be laid tight and secured to prevent movement.
- Planks shall overlap the bearing on each end by a minimum of 12 inches.
- Wire mesh, exterior plywood, or equivalent, shall be used around columns where planks do not fit tightly.
- Provisions shall be made to secure temporary flooring against displacement.
- All unused openings in floors, temporary or permanent, shall be completely planked over or guarded.

Stability of Structures

- During the final placing of solid web structural members, the load shall not be released from the hoisting line until the members are secured with not less than two bolts, or the equivalent at each connection and drawn up wrench tight.
- Open web steel joists shall not be placed on any structural steel framework unless such framework is safely bolted or welded.
- In steel framing, where bar joists are used, and columns are not framed in at least two directions with structural steel members, a bar joist shall be field-bolted at columns to provide lateral stability during construction.

- Where long span joists or trusses, 40 feet or longer, are used, a center row of bolted bridging shall be installed to provide lateral stability during construction prior to slacking of hoisting line.
- No load shall be placed on open web steel joists until all stability requirements are met.
- Tag lines shall be used for controlling loads.
- Connections of the equipment used in plumbing-up shall be properly secured.
- The turnbuckles shall be secured to prevent unwinding while under stress.
- Plumbing-up guys-related equipment shall be placed so that employees can get at the connection points.
- Plumbing-up guys shall be removed only under the supervision of a competent person.
- Employees shall be provided with personal fall arrest when they are working on float scaffolds.

Tools and Equipment

- Containers shall be provided for storing or carrying rivets, bolts, and drift pins, and secured against accidental displacement when aloft.
- Pneumatic hand tools shall be disconnected from the power source, and pressure in hose lines shall be released, before any adjustments or repairs are made.
- Airline hose sections shall be tied together except when quick disconnect couplers are used to join sections.
- Eye protection shall be provided for employees where there is the possibility of eye injury.
- When bolts or drift pins are being knocked out, means shall be provided to keep them from falling.
- Impact wrenches shall be provided with a locking device for retaining the socket.
- Riveting shall not be done in the vicinity of combustible material unless precautions are taken to prevent fire.
- When rivet heads are knocked off, or backed out, means shall be provided to keep them from falling.
- A safety wire shall be properly installed on the snap and on the handle of the pneumatic riveting hammer and shall be used at all times. The wire size shall be not less than No. 9 (B&S gauge), leaving the handle and annealed No. 14 on the snap, or equivalent.

10.1.17 Work In Roadway

- ANY activity that places itself in the roadway or within 15 feet (4.6 metres) of a highway or freeway must be reviewed prior to the operation, to determine if traffic control measures are needed to protect workers and the public.
- A competent person with a background in Traffic Control Safety shall make the determination if traffic control measures are needed.

- For those operations requiring traffic control measures, a competent person will prepare a traffic control plan in advance of the work operation.
- Traffic control plans that restrict traffic continuously for 3 or more days will be designed by a Traffic Control Engineer.
- Traffic control plans for operations that restrict traffic for less than 48 hours will be drawn by a competent person who has completed a Traffic Control Supervisor course or similar training.
- Before conducting work in travel lanes or along right of way, the appropriate road authority will be notified and any required permit to work in the roadway or right of way will be obtained. In many cases, if traffic control services are subcontracted out the subcontractor will obtain the permit.
- Traffic conflicts should be minimized by not scheduling work at peak travel times.
- Only trained personnel should be working within roadways – LG Constructors personnel must take the traffic control training found on the VO.
- A copy of the traffic control plan will be on site during work activities.
- Only competent personnel will set up traffic control devices in accordance with the traffic control plan.
- Personnel will not commence work operations until the Traffic Control provider has installed all signs and devices according to the plan.
- Crews working in or near active traffic should know the emergency procedures for the work location, this includes having an escape route out of the work area.
- Night work operations must be planned and proper lighting must be a priority.
- All flaggers on site will possess a valid Flagger Training card and obey the procedures for the state in accordance with the training they have received
- Work will be suspended if the traffic control plan is not effective in protecting the workers in the travel lane or the public.
- A copy of the traffic control plan used will be filed in the project file along with a copy of all flagger cards for those flaggers used.

10.1.18 Welding and Cutting (with Compressed Gas Cylinders)

- Verify hot work permit is completed
- Wear appropriate PPE
- Remove combustible materials in the immediate hot work area
- Station fire watch with fire extinguisher
- Valve caps must be in place when cylinders are transported, moved, or stored

- Cylinder valves must be closed when cylinders are not being used and when cylinders are being moved
- Cylinders must be secured in an upright position at all times
- Cylinders must be positioned to avoid being struck or knock over; coming in contact with electrical circuits or extreme heat sources; and shielded from welding and cutting operations
- Cylinders must be secured on a cradle, basket, or pallet that has been appropriately designed and engineered when hoisting; they may not be hoisted by choker slings or with regulators and hoses attached
- Flash arrestors or reverse-flow check valves shall be installed on all fuel gas cylinders.
- Contact the HSM to ensure a detailed THA identifies the exposing agents, control methodologies, and personal exposure monitoring methodologies if required.

10.1.19 Working Alone

Working alone may not be hazardous in itself, but the work conditions or tasks to be performed on a project site may affect a person's ability to safely perform the work alone or to receive assistance in the event of an emergency.

Personnel can be assigned to work alone only by their project manager, who must assess potential hazards and appropriate control measures, with assistance from the responsible Health and Safety manager (RHSM).

Listed below are some examples, not all-inclusive, of workplace conditions that must be considered and impact the ability of the employee to safely work alone:

- Is the amount of time needed for the employee to complete the task reasonable, or will fatigue become a factor?
- Do tasks include handling and lifting materials; operating machinery or powered tools; maintaining electrical, pneumatic, or steam powered systems; or working with hazardous substances?
- Is access to the work area difficult, requiring working at heights, below ground, or in structures that are difficult to enter or exit?
- Does the work location present a risk of violence to the employee; require travel off public roads through desolate or steep terrain; or involve work at a remote location or over or near rivers, pools, or lakes?
- What are the environmental conditions, such as temperature extremes or weather conditions?
- Must the work be performed beyond normal business hours or on weekends or holidays?
- Is the person working alone able to communicate with another employee in the event of an emergency or are emergency services readily available?

Examples (not all-inclusive) of precautionary or control measures that can be used to address the conditions or hazards of working alone:

- Conducting a review of the work schedule to determine whether the task could be completed during a time when the employee does not have to work alone.
- Establishing a communication process that will reliably allow contact with the employee working alone, requires check-in at designated time intervals, includes response actions when communication is lost or check-in is not completed, and verifies the employee has returned to their base of operation after completing the task.
- Using an alarm system or employee monitoring system, such as PASS, that signals to another employee when there is a problem or emergency.
- Requiring supervisors to periodically visit and observe worksites where employees work alone.
- Issuing the proper personal protective equipment (PPE) to the employee and ensure it is maintained in acceptable condition.
- Ensuring emergency supplies are provided for employee to use in event of fire, injury/illness, or survival provisions when working in a remote area.

10.2 Equipment Hazards

Equipment operations may pose hazards during project activities. The following sections summarize these hazards.

10.2.1 Aerial Lifts

- Only authorized and trained personnel are permitted to operate aerial lifts—certificates or proof of training must be provided
- Aerial lifts and associated components shall be inspected each day, before use, to ensure safe operational condition; all defective components shall be corrected before the lift is placed in service, if aerial lifts are used on multiple shifts, an inspection shall be done on each shift, aerial lifts operated by LG Constructors employees shall be inspected using the Aerial Lift Inspection Form presented in Attachment 3, subcontractors operating aerial lifts are required to document daily inspections
- Personnel shall wear a full body harness and attach their lanyard to the manufacturer's approved attachment point located on the boom or basket; never attach to an adjacent structure
- Personnel working in or operating a scissor lift are not required to wear fall protection as long as they are working totally within the confines of the lift, having all guardrails in place, with both feet on the floor of the lift
- Safety bar or chain must be engaged when personnel are in the lift.
- Personnel shall remain in the basket at all times and shall not climb on the lift to gain access to elevated work location(s)
- Personnel shall always stand on the floor of the basket and not on the guardrails, planks, ladders, or other devices to extend reach

- Aerial lifts shall be positioned on level surfaces when possible and the brakes shall be set; if outriggers are provided, they shall be positioned on solid surfaces or cribbing; wheel chocks shall be installed before using lifts on inclines
- Lifts shall be provided with upper and lower controls, these controls shall be tested for proper function before each day's use, and the lower controls shall not be operated unless permission has been obtained from personnel in the lift, except in the case of emergency
- Boom and basket load limits, as specified by the manufacturer, shall be known and shall not be exceeded
- Aerial lifts shall be prohibited from moving with workers in the basket, unless specifically designed for this type of operation
- Personnel shall not work on elevated platforms when winds exceed 20 miles per hour
- Lifts shall be lowered before moving horizontally
- An aerial lift shall not be used as a material hoist

10.2.2 Compressed Gas Cylinders

- Valve caps must be in place when cylinders are transported, moved, or stored.
- Cylinder valves must be closed when cylinders are not being used and when cylinders are being moved.
- Cylinders must be secured in an upright position at all times.
- Cylinders must be shielded from welding and cutting operations and positioned to avoid being struck or knock over; contacting electrical circuits; or exposed to extreme heat sources.
- Cylinders must be secured on a cradle, basket, or pallet when hoisted; they may not be hoisted by choker slings.
- Cylinders must be appropriately labeled and stored away from access /egress.

10.2.3 Crane Operations and Requirements

Operator Qualifications

This procedure provides guidance for ensuring, prior to assignment, that all crane operators are properly qualified for crane operations and to provide guidance for standardizing the certification methods.

Cranes shall be operated only by the following personnel:

- Designated operators
- Apprentice operators, while under the direct supervision of a designated operator
- Maintenance and test personnel, when necessary in the performance of their duties
- Inspectors

No one, other than personnel specified above, shall enter a crane cab with the exception of persons such as helpers and supervisors whose duties require them to do so, and then only in the performance of their duties and with the knowledge of the operator or other appointed person.

All mobile crane operators must be instructed in and given the opportunity to read and understand the manufacturer's operators manual for each make and model of crane the will operate. The employee shall also be instructed in the applicable OSHA and ANSI standards. The operator must be licensed by the project to operate the specific make and model assigned.

Operators must have a thorough understanding of all safety rules and regulations pertaining to operating the different types of cranes, including "cherry pickers" and boom trucks. Additionally, he/she is responsible for the following:

- The ability to read and understand the crane's load chart.
- An understanding of the ANSI crane hand signal chart.
- How to determine the weight of a load.
- Basic knowledge of safe crane operation.
- Basic understanding of safe rigging techniques

Operators and/or operator trainees shall meet the following physical qualifications:

- Have vision of at least 20/30 Snellen in one eye and 20/50 in the other with or without glasses.
- Be able to distinguish red, green, and yellow regardless of position of colors, if color differential is required for operation.
- Hearing, with or without hearing aid, must be adequate for a specific operation.
- Have sufficient strength, endurance, agility, coordination, and speed of reaction to meet the demands of equipment operation.
- Show no evidence of physical defects or emotional instability which could render the operator a hazard to self or others; or which, in the opinion of the examiner, [1] could interfere with the operator's safe performance. The existence of any such evidence may be sufficient cause for disqualification. In such cases specialized clinical or medical judgments and tests may be required.
- Show no evidence that an operator is subject to seizures or loss of physical control; the existence of such evidence may be sufficient cause for disqualification. Specialized medical tests may be required to determine these conditions.
- Have good depth perception, field of vision, reaction time, manual dexterity, coordination, and no tendencies to dizziness or similar undesirable characteristics.
- Operator's physical abilities should be review annually.

Mobile Crane Operations

This procedure provides guidance for the protection of personnel operating mobile cranes or working in the area of operation.

Each mobile crane will be inspected by a competent person for mechanical defects upon its arrival, before its use on the project, and monthly thereafter. An Inspection Checklist will be completed and retained in the maintenance records on site. The operator shall perform a daily inspection on all safety features of the crane and document the findings prior to use on each shift.

It is recommended that the equipment be load tested only in accordance with the manufacturer's specifications and limitations and American Standards Institute (ANSI) B30.5-1982, Mobile and Locomotive Cranes, 5-2.2.2.

No modifications or alterations that affect the capacity or safe operation of the equipment will be made by the project or any individual without the manufacturer's written approval.

A copy of the manufacturer's operator's manual for each make and model machine must be in the cab of the crane and the manufacturer's specifications and limitations noted in it will be observed.

Accessible areas within the swing radius of the rotating superstructure counterweight of a crane will be barricaded to prevent employees from being struck or crushed by the counterweight.

The hand signals to be used are those prescribed by the ANSI standard applicable to each crane. Only one (1) individual will assume the flagging duties and no other person shall flag during the lift, with the exception of a person giving an emergency stop signal. If the operator determines that the flagging designee does not have a working knowledge of standard hand signals, he/she shall stop the lifting operation to ask for a qualified flagger.

In the operations and use of any hydraulic crane when both an auxiliary and main hoist lines are reeled, an anti-two blocking warning system is recommended on both auxiliary and main hoist lines.

No person will ride the headache ball, the hook, or the load being handled by the crane. All operations involving the use of suspended personnel baskets or platforms shall comply with OSHA and ANSI regulations. The crane shall be equipped with an anti-two blocking device.

Only one (1) load will be hoisted at a time. Two or more separately rigged loads (i.e. skip pan and steel beam, etc) will never be hoisted in one lift even if the combined loads are within the rated capacity.

No person shall ride on the machine nor should the machine be used to transport personnel.

Traveling with a load (pick and carry) is not recommended as a means of transporting loads from one location to another on the project and should be used only as a last resort. The use of farm wagons, fork trucks, boom trucks, and flat bed trucks should be used to transport these loads rather that "pick and carry" operations.

Operators shall not engage in any practice that could divert attention while actually engaged in operating the crane.

Regardless of the size or weight of the load to be lifted, the crane's outrigger beams shall be fully extended and the wheels raised off the ground.

Cranes shall not be operated when wind speed exceeds maximum velocities recommended by the manufacturer.

Rated load capacities, recommended operating speeds, special hazard warnings, operating notes and special instructions will be posted on all equipment and will be visible to the operator while he/she is at the control station. Illustrations of the hand signals used in connection with the operation of equipment will be posted at the project site.

Operators shall be responsible for those operations under their direct control. Whenever there is reasonable cause to believe that the lift might be dangerous or unsafe, the operator shall have the authority to stop and refuse to handle loads until safety has been assured.

Electrical Hazards
A crane will not be operated under any circumstances wherein any part of the crane or load will come within ten (10) feet of energized electrical distribution lines rated 50 KV or below unless:

1. The lines have been de-energized and are grounded at the point of work.
2. Insulating barriers that are not part of the equipment have been erected.
3. For lines rated over 50 KV, the minimum clearance between lines and any part of the machine or load will be ten (10 feet plus 0.4 inches for each kilovolt over 50 KV or twice the length of the line insulator.
4. All lines will be considered energized unless the person or utility owning the lines indicate in writing that they are not energized and that the lines are grounded at the point of operation.
5. To ensure that the operator maintains good visibility when working in close proximity to energized lines, a spotter or signal person can be designated to assist the operator in maintaining the ten (10) foot clearance.

Critical Lifts
A Critical Lift Team (operator, lift authorizer, field supervisor, etc.) shall be designated to develop a written procedure to ensure the safety of personnel, equipment and facilities when a critical lift is to be made at the project site.

A Critical lift is defined as:

- A lift that exceeds 80% of the crane's operating chart.
- A lift that exceeds 20 tons or greater in total weight
- The lift is in proximity (closer than 20 feet) of high voltage lines.
- The lift is over occupied buildings or public thoroughfares.
- The lift if over extremely hazardous systems.
- The equipment being lifted has a long lead-time for replacement and if damaged, could cause business interruption.
- When two cranes or combination of equipment and crane will be used to make a lift.

The crane operator and lift authorizer shall complete the Critical Lift Permit (Attachment 9) to determine the proper set up of the crane, that proper rigging equipment/attachments have been selected and that the **total weight** of equipment with crane and rigging attachments has been calculated.

A Pre-Task Plan (PTP) shall accompany the Crane Lift Plan to identify all hazards associated with the critical lift and to establish safe work guidelines to complete the lift without incident.

The Crane Lift Plan and PTP shall be reviewed with all personnel associated with the lift procedure immediately before the critical lift is made.

Crane Suspended Personnel Platforms

- The use of a crane to hoist employees on a personnel platform is prohibited, except when the erection, use and dismantling of conventional means of reaching the worksite, such as a

personnel hoist, ladder, stairway aerial lift, elevating work platform, or scaffold would be more hazardous or is not possible because of structural design or worksite conditions.

- Final approval to use a personnel platform in this manner must come from the Project Manager and the LG Constructors Power Business Group Safety Director.
- Hoisting of the personnel platform shall be performed in a slow, controlled, cautious manner with no sudden movements of the crane or the platform.
- Load lines shall be capable of supporting, without failure, at least seven times the maximum intended load; except where rotation resistant rope is used, the lines shall be capable of supporting without failure, at least ten times the maximum intended load.
- Load and boom hoist drum brakes, swing brakes, and locking devices such as pawls or dogs shall be engaged when the occupied personnel platform is in a stationary position.
- The crane shall be uniformly level within 1 percent of level grade and located on firm footing.
- Cranes equipped with outriggers shall have them all fully deployed following manufacturer's specifications when hoisting employees.
- The total weight of the loaded personnel platform and related rigging shall not exceed 50 percent of the rated capacity for the radius and configuration of the crane or derrick.
- The use of machines having live booms (booms in which lowering is controlled by a brake without aid from other devices which slow the lowering speeds) is prohibited.
- Cranes and derricks with variable angle booms shall be equipped with a boom angle indicator, readily visible to the operator.
- Cranes with telescoping booms shall be equipped with a device to indicate clearly to the operator, at all times, the boom's extended length or an accurate determination of the load radius to be used during the lift shall be made prior to hoisting personnel.
- A positive acting device shall be used, which prevents contact between the load block or overhaul ball and the boom tip (anti-two blocking device), or a system shall be used that deactivates the hoisting action before damage occurs in the event of a two-blocking situation (two-block damage prevention feature).
- The load line hoist drum shall have a system or device on the power train, other than the load hoist brake, which regulates the lowering rate of speed of the hoist mechanism (controlled load lowering). Free fall is prohibited.

Platform Design Specifications

- The personnel platform and suspension system shall be designed by a qualified engineer or a qualified person competent in structural design.
- The suspension system shall be designed to minimize tipping of the platform due to movement of employees occupying the platform.
- The personnel platform itself, except the guardrail system and personnel fall arrest system anchorages, shall be capable of supporting, without failure, its own weight and at least five times the maximum intended load.

- Each personnel platform shall be equipped with a guardrail system and shall be enclosed at least from the toe board to mid-rail with either solid construction or expanded metal having openings no greater than ½ inch.
- A grab rail shall be installed inside the entire perimeter of the personnel platform.
- Access gates, if installed, shall not swing outward during hoisting.
- Access gates, including sliding or folding gates, shall be equipped with a restraining device to prevent accidental opening.
- Headroom shall be provided, which allows employees to stand upright in the platform.
- In addition to the use of hard hats, employees shall be protected by overhead protection on the personnel platform when employees are exposed to falling objects.
- All rough edges exposed to contact by employees shall be surfaced or smoothed in order to prevent injury to employees from punctures or lacerations.
- All welding of the personnel platform and its components shall be performed by a qualified welder familiar with the weld grades, types and materials specified in the platform design.
- The personnel platform shall be conspicuously posted with a plate or other permanent marking, which indicates the weight of the platform and its rated load capacity or maximum intended load.

Pre-Lift Operations

- A pre-lift meeting attended by the crane or derrick operator, signal person(s), employee(s) to be lifted, and the person responsible for the task to be performed shall be held to review the appropriate requirements of 29 CFR1926.550(g).
- The personnel platform shall not be loaded in excess of its rated load capacity. When a personnel platform does not have a rated load capacity, the personnel platform shall not be loaded in excess of its maximum intended load.
- The number of employees occupying the personnel platform shall not exceed the number required for the work being performed.
- Personnel platforms shall be used only for employees, their tools, and the materials necessary to do their work and shall not be used to hoist only materials or tools when not hoisting personnel.
- Materials and tools for use during a personnel lift shall be secured to prevent displacement.
- Materials and tools for use during a personnel lift shall be evenly distributed within the confines of the platform while the platform is suspended.
- When a wire rope bridle is used to connect the personnel platform to the load line, each bridle leg shall be connected to a master link or shackle in such a manner to ensure that the load is evenly divided among the bridle legs.
- Hooks on overhaul ball assemblies, lower load blocks, or other attachment assemblies shall be of a type that can be closed and locked, eliminating the hook throat opening. Alternatively an alloy anchor-type shackle with a bolt, nut, and retaining pin may be used.
- Wire rope, shackles, rings, master links, and other rigging hardware must be capable of supporting, without failure, at least five times the maximum intended load applied or

transmitted to that component. Where rotation resistant rope is used, the slings shall be capable of supporting without failure at least ten times the maximum intended load.

- All eyes in wire rope slings shall be fabricated with thimbles.
- Bridles and associated rigging for attaching the personnel platform to the hoist line shall be used only for the platform and the necessary employees, their tools, and the materials necessary to do their work and shall not be used for any other purpose when not hoisting personnel.
- A trial lift with the unoccupied personnel platform loaded at least to the anticipated lift weight shall be made from ground level, or any other location where employees will enter the platform to each location at which the personnel platform is to be hoisted and positioned.
- This trial lift shall be performed immediately prior to placing personnel on the platform.
- The operator shall determine that all systems, controls, and safety devices are activated and functioning properly; that no interferences exist; and that all configurations necessary to reach those work locations will allow the operator to remain under the 50 percent limit to the hoist's rated capacity.
- Materials and tools to be used during the actual lift can be loaded in the platform for the trial lift if secured to prevent displacement and evenly distributed within the confines of the platform.
- A single-trial lift may be performed at one time for all locations that are to be reached from a single set-up position.
- The trail lift shall be repeated prior to hoisting employees whenever the crane is moved and setup in a new location or retuned to a previously used location.
- The trial lift shall be repeated when the lift route is changed unless the operator determines that the route change is not significant (i.e. the route change would not affect the safety of hoisted employees).
- After the trial lift, and just prior to hoisting personnel, the platform shall be hoisted a few inches and inspected to ensure that it is secure and properly balanced.
- Employees shall not be hoisted unless hoist ropes are free of kinks; multiple part lines are not twisted around each other; the primary attachment are centered over the platform; and the hoisting system is inspected, if the load rope is slack, to ensure all ropes are properly stated on drums and in sheaves.
- A visual inspection of the crane, rigging personnel platform and the crane base support or ground shall be conducted by a competent person immediately after the trial lift to determine whether the testing has exposed any defect or produced any adverse affect upon any component or structure.
- Any defects found during inspections that create a safety hazard shall be corrected before hoisting personnel.
- At each job site, prior to hoisting employees on the personnel platform, and after any repair or modification, the platform and rigging shall be proof tested to 125 percent of the platform's rated capacity by holding it in a suspended position for five minutes with the test load evenly distributed on the platform (there may be done concurrently with the trial lift).

- After proof testing, a competent person shall inspect the platform and rigging. Any deficiencies found shall be corrected and another proof test shall be conducted.
- Personnel hoisting shall not be conducted until the proof testing requirements are satisfied.
- A complete trial run shall be performed to test the route of travel before employees are allowed to occupy the platform. This trial run can be performed at the same time as the trial lift.
- A meeting attended by the crane operator, signal person(s) (if necessary for the lift), employee(s) to be lifted, and the person responsible for the tasks to be performed shall be held to review the appropriate requirements of the standard and any other procedures to be followed.
- This meeting shall be held prior to the trail lift at each new work location and shall be repeated for any employees newly assigned to the operation.

Lifting Operations

- Employees shall keep all parts of the body inside the platform during raising, lowering, and positioning. This provision does not apply to an occupant of the platform shall be secured to the structure where the work is to be performed, unless securing the structure creates an unsafe situation.
- Tag lines shall be used unless their use creates an unsafe condition.
- The crane operator shall remain at the controls at all times when the crane engine is running and the platform is occupied.
- Hoisting of employees shall be promptly discontinued upon indication of any dangerous weather conditions or other impending danger.
- Employees being hoisted shall remain in continuous sight of and in direct communication with the operator or signal person. In those situations where direct visual contact with the operator is not possible, and the use of a signal person would create a greater hazard for the person, direct communication alone such as by radio may be used.
- Except over water, employees occupying the personnel platform shall use a body harness with lanyard appropriately attached to the lower load block or overhaul ball, or to a structural member within the personnel platform capable of supporting a fall impact for employees using the anchorage.
- When working over or near water personnel shall be provided with U.S. Coast Guard approved life jacket or buoyant work vests.
- No lifts shall be made on another of the crane's load lines while personnel are suspended on a platform.
- Hoisting of employees while the crane is traveling is prohibited.

10.2.4. Earthmoving Equipment (Operating Heavy Equipment)

- When in the proximity of heavy equipment, wear high visibility vests.
- Always get the attention of equipment operator before approaching equipment, and only when the equipment has ceased operation.

- If equipment back up alarms are not working, leave the area immediately until they are fixed.
- Only authorized, licensed drivers shall be permitted to operate equipment; the Earthmoving Equipment Operator Evaluation Form (Attachment 11) shall be used to document the LG Constructors earthmoving equipment operator evaluation process
- When earthmoving equipment is to be used to transport or hoist loads utilizing hooks, eyes, slings, chains, or other rigging, written proof of qualifications of equipment operators, riggers, and others involved in the transporting and hoisting operations must be provided.
- Operators shall wear seatbelts
- Equipment must be checked at the beginning of each shift to ensure the equipment is in safe operating condition and free of apparent damage (the check should include: service brakes, parking brakes, emergency brakes, tires, horn, back-up alarm, steering mechanism, coupling devices, seat belts and operating controls); the Earthmoving Equipment Inspection Form, Attachment 12, shall be used when LG Constructors employees are operating earthmoving equipment
- All defects in equipment shall be corrected before the equipment is placed in service
- Documentation of equipment inspection must be maintained onsite at all times (LG Constructors equipment operators shall use the Earthmoving Equipment Inspection Form, Attachment 12)
- All contractors will be required to provide LG Constructors with their heavy equipment preventative maintenance schedules for the heavy equipment they will use on the project
- Equipment shall not be used to lift personnel; loads shall not be lifted over the heads of personnel
- All equipment controls shall be in a neutral position, with the motors stopped and brakes set
- Equipment which is operating in reverse must have a reverse signal alarm distinguishable from the surrounding noise or a signal person when the operators view is obstructed
- When equipment is used near energized power lines, the closest part of the equipment must be at least 10 feet (3 m)from the power lines < 50 kV; provide an additional 0.4 inch (1cm) for every 1 kV over 50 kV
- A person must be designated to observe clearances of energized power lines and give timely warning for all operations where it is difficult for the operator to maintain the desired clearance by visual means
- All overhead power lines must be considered energized until the electrical utility authorities certify that it is not an energized line and it has been visibly grounded
- Underground utility lines must be located before excavation begins
- Operators loading/unloading from vehicles are responsible for seeing that vehicle drivers are in the vehicle cab or in a safe area

- The parking brake shall be set whenever equipment is parked, wheels must be chocked when parked on inclines
- When not in operation, the blade/bucket must be blocked or grounded; the master clutch must be disengaged when the operator leaves the cab
- When equipment is unattended, power must be shut off, brakes set, blades/buckets landed, and shift lever in neutral

10.2.5 Forklifts

- Only certified forklift operators are permitted to operate forklifts on LG Constructors projects—if a LG Constructors employee is required to operate a forklift, they must first complete training and an evaluation process to become a certified forklift operator; the HSM shall be contacted to obtain forklift operator certification or to approve previously held certificates
- Subcontractors operating forklifts are responsible for complying with all applicable HS&E training requirements and for providing the training necessary to complete their tasks safely; proof of forklift operator certification shall be provided to LG Constructors before operating the forklift
- A daily safety briefing/meeting shall be conducted with all forklift operators to discuss the work planned for the day and the HS&E requirements to be followed
- Forklifts and associated components shall be inspected each day, before use, to ensure safe operational condition
  - All defective components shall be corrected before the vehicle is placed in service
  - If forklifts are used on multiple shifts, an inspection shall be done on each shift
  - Forklifts operated by LG Constructors employees shall be inspected using the Forklift Inspection Form presented in Attachment 3
  - Subcontractors operating forklifts are required to document daily forklift inspections
- The rated capacity of the forklift shall be clearly posted in a location visible to the operator
  - Any modifications to the forklift that affect the capacity or safe operation of the forklift shall have written approval from the manufacturer
  - All decals, labels, and nameplates shall be changed accordingly and maintained in a legible condition
  - If the forklift uses front-end attachments other than factory installed, the forklift shall be marked to identify the attachments and the operating parameters for the attachment
- All high-lift forklifts shall have overhead guards and vertical load backrests; overhead guards are intended to offer protection from the impact of small packages and boxes, but not the impact of a falling capacity load
- Seat belts shall be provided for forklifts except for forklifts designed only for standup operation

- Forklifts shall be equipped with a backup alarm that is operational when the forklift is used in reverse; a spotter may be used to guide reverse movement when backup alarms are not in operation
- Forklifts shall be equipped with a horn, distinguishable from the surrounding noise level, that shall be operated as needed when the machine is moving in either direction
- Forklifts shall have a service braking system capable of stopping and holding the forklift fully loaded
- When general lighting is less than adequate, forklifts shall be equipped with directional lighting
- Concentrations of carbon monoxide from forklift operation shall not exceed the permissible exposure limit (PEL) of 50 parts per million (ppm)
- At least one fire extinguisher shall be available for use at the forklift operating area

10.2.6 Gas Powered Sump Pumps and Generators

- Never refuel a gas engine until it is cooled off! Fires regularly are caused from fueling hot engines.
- Store extra fuel in a metal fuel can.
- Have a fire extinguisher nearby when refueling
- If the gas powered equipment is loud wear hearing protection while working near that location.
- Remove rings while starting the pump. There have been cases where someone used his left hand to stabilize a gas engine while starting it and the ignition sparked to his wedding ring and caused 3rd degree burns.

10.2.7 Hand and Power Tools

- The employer is responsible for complying with all applicable HS&E training requirements relating to hand and power tool safety and for providing any additional training necessary to complete their tasks safely.
- Operate all tools according to the manufacturer's instructions and within design limitations
- All hand and power tools shall be maintained in a safe condition
- Tools are to be inspected and tested before use—if a tool is found to be defective it is to be tagged "Do Not Use" and removed from service until repaired
- Personal protective equipment, such as gloves, safety glasses, earplugs, and face shields, are to be used when exposed to a hazard from the tool, such as grinding, or chipping but are not limited to these
- Power tools are not to be carried or lowered by the cord or hose
- Disconnect tools from energy sources when not in use, before servicing and cleaning, and when changing accessories such as blades, bits, and cutters

- Safety guards on tools are to remain installed while the tool is in use and promptly replaced after repair or maintenance has been performed
- Tools are to be stored properly, where they will not be damaged or come in contact with hazardous materials
- If a cordless tool is connected to its recharge unit, both pieces of equipment must conform strictly with electrical standards and manufacturer's specifications
- Tools used in an explosive environment must be rated (i.e., intrinsically safe, spark proof, etc.) for work in that environment
- When using a knife or blade tool, stroke or cut away from the body with a smooth motion taking care not use excessive force that could damage tool, material being cut, or unprotected hands
- As alternatives to manual and pistol-grip hand tools that involve work with highly repetitive movement, extended elevation, constrained postures, or positioning of body members (e.g., hand, wrist, arm, shoulder, neck, etc.):
  - Consider alternative tool design
  - Improve posture
  - Select appropriate materials
  - Organize work—sequencing to prevent muscular skeletal, repetitive motion, and cumulative trauma stressors
- Only employees who have been trained in the operation of the particular tool in use shall be allowed to operate a powder-actuated tool—training and certification must be provided to the SC before using the tool

10.2.8 Lasers

Laser beams used in surveying may be hazardous to the eyes. The severity of the hazard depends on the type of laser and its power. Avoid direct eye contact with the beam. This is most important when wearing corrective eyeglasses which can intensify the beam's focus on the retina. Lasers used in surveying are usually low power. Lasers must be posted with safety warning signs.

10.2.9 All Terrain Vehicles (ATVs)

ATVs handle differently from other vehicles, such as motorcycles and cars. Proper instruction and practice are important. It is important to carefully read and follow the instructions and warnings in the owner's manual and on labels

- Always wear a helmet and eye protection.
- Always wear long sleeves and pants.
- Never ride on public roads (a leading cause of fatalities to ATV riders is riding on or crossing a road illegally or improperly); if it is necessary to cross a road or highway, use the following guidelines to reduce the risk:
  - Make sure you know your state's laws and regulations before you cross any road.

    - Before crossing, bring your ATV to a complete stop on the shoulder of the road.
    - Yield the right of way to all oncoming traffic and look both ways.
    - Ride cautiously; your ATV will handle differently on pavement and may be difficult to maneuver, increasing the danger of collision.
    - Cross the road at a 90-degree angle where there are no obstructions and your visibility is good.
    - If you are riding in a group, have the first rider dismount on the shoulder before crossing and watch for traffic, and wave the group across the road. Have the last rider dismount on the shoulder after crossing and watch traffic, to help the group leader across. All riders standing alongside a road should wear a high visibility vest.
    - Remember crossing roads improperly or riding illegally on the road is a major cause of serious accidents and fatalities to ATV users, so use extra caution. Always assume the drivers do not see you, since most drivers look for cars, not ATVs.
- Never ride while taking medication that may affect your ability to safely operate the vehicle, or when you are tired.
- Never ride alone.
- Never carry a passenger on a single-rider vehicle.
- Ride only on designated trails.
- Operate at safe speeds.
- Be extra careful on rough terrain, and watch carefully for sharp bumps, holes ruts or obstacles.
- When riding through mud or water:
    - Remember footrests may become slippery.
    - Determine water depth before attempting a crossing; do not exceed the water depth specified in your owner's manual.
    - Avoid fast-flowing water.
    - If you cross a stream, use an established place where the stream banks have a gradual incline.
    - Be prepared to shift your weight in any direction to maintain balance.
    - Watch for submerged obstacles.
    - Test brakes after leaving water.
- Know the special skills required to safely operate an ATV on terrain, such as going uphill, going downhill, traversing hills, turning, braking and riding over obstacles.
- If you are not an experienced rider, take an ATV RiderCourse or at least review the owner's manual (see owner of ATV) and ATV Riding Tips (provided to the Project Manager).

10.2.10 Scaffolds

- The competent person must perform a detailed daily inspection of the scaffold and all components

- Documentation of the daily inspection must be maintained onsite at all times
- Do not access scaffolds until the competent person has completed the work shift inspection and has authorized access
- Follow all requirements established by the competent person or as identified on the scaffold tag
- Do not access scaffolds that are damaged or unstable at any time and for any reason
- Only access scaffolds by means of a ladder, stair tower, ladder stand, ramp, integral prefabricated scaffold access, or other equivalent safe means of access
- Scaffold crossbracing shall not be used to access scaffold platforms
- Remain within the scaffold guardrail system when provided
- Leaning over or stepping across a guardrail system is not permitted
- Use personal fall arrest systems when required by the competent person and when working from suspension scaffolds or boatswains' chairs
- Do not stand on objects (boxes, buckets, bricks, blocks, etc.) or ladders on top of scaffold platforms to increase working height
- Do not work on scaffolds covered with snow, ice, or other slippery material or work on scaffolds during storms or high winds unless personal fall arrest systems or wind screens are provided and the competent person determines it is safe to remain on the scaffold

10.2.11 Stairways and Ladders

- A stairway or ladder is generally required when a break in elevation of 19 inches (48 cm) or greater exists
- Personnel should avoid using both hands to carry objects while on stairways; if unavoidable, use extra precautions
- Personnel must not use pan and skeleton metal stairs until permanent or temporary treads and landings are provided the full width and depth of each step and landing
- Ladders must be inspected daily by a competent person for visible defects
- Defective ladders must be tagged and removed from service
- Ladders must be used only for the purpose for which they were designed and shall not be loaded beyond their rated capacity
- Only one person at a time shall climb on or work from an individual ladder
- User must face the ladder when climbing; keep belt buckle between side rails
- Ladders shall not be moved, shifted, or extended while in use
- User must use both hands to climb; use rope to raise and lower equipment and materials

- Straight and extension ladders must be tied off to prevent displacement
- Ladders that may be displaced by work activities or traffic must be secured or barricaded
- Portable ladders must extend at least 3 feet (1 m) above landing surface
- Straight and extension ladders must be positioned at such an angle that the ladder base to the wall is one-fourth of the working length of the ladder
- Stepladders are to be used in the fully opened and locked position
- Users are not to stand on the top two steps of a stepladder; nor are users to sit on top or straddle a stepladder
- Fixed ladders greater than or equal to 24 feet (7.3 m)in height must be provided with fall protection devices
- Fall protection should be considered when working from extension, straight, or fixed ladders greater than 6 feet (1.8 m) from lower levels and both hands are needed to perform the work, or when reaching or working outside of the plane of ladder side rails

10.2.12 Respiratory Protection

Respiratory protection is not expected to be needed to complete the general activities listed under this project's scope of work. If respiratory protection is necessary to protect workers from over exposure to dusts, chemical vapors, fumes or nuisance odors LG Constructors employees must be enrolled in LG Constructors respiratory protection program and follow the requirements of HSE&Q SOP 121 and subcontractors must provide verification of enrollment into a respiratory protection program and provide necessary documentation of medical clearance, training, and fit test.

- Respirator users must have completed appropriate respirator training within the past 12 months. Level C training is required for air-purifying respirators (APR) use and Level B training is required for supplied-air respirators (SAR) and self-contained breathing apparatus (SCBA) use. Specific training is required for the use of powered air-purifying respirators (PAPR).
- Respirator users must complete the respirator medical monitoring protocol and been approved for the specific type of respirator to be used.
- Tight-fitting face piece respirator (negative or positive pressure) users must have passed an appropriate fit test within past 12 months.
- Respirator use shall be limited to those activities identified in this plan. If site conditions change that alter the effectiveness of the specified respiratory protection, the HSM shall be notified to amend the written plan.
- Tight-fitting face piece respirator users shall be clean-shaven and shall perform a user seal check before each use.
- Canisters/cartridges shall be replaced according to the change-out schedule specified in this plan. Respirator users shall notify the SC of any detection of vapor or gas breakthrough. The SC shall report any breakthrough events to the HSM for schedule upgrade.
- Respirators in regular use shall be inspected before each use and during cleaning
- Respirators in regular use shall be cleaned and disinfected as often as necessary to ensure they are maintained in a clean and sanitary condition.

- Respirators shall be properly stored to protect against contamination and deformation.
- Field repair of respirators shall be limited to routine maintenance. Defective respirators shall be removed from service.
- When breathing air is supplied by cylinder or compressor, the SC shall verify the air meets Grade D air specifications.
- The SC shall complete the H&S Self-Assessment Checklist – Respiratory Protection include in Attachment 2 of this plan to verify compliance with LG Constructors respiratory protection program.

10.3 Hazard Communication Program

Purpose
To establish a Hazard Communication Program to comply with, implement, and communicate the Occupational Safety and Health Administration Hazard Communication Standard, 29 CFR 1926.59, and to provide workers protection against hazardous chemicals in the workplace.

Each contractor/subcontractor shall comply fully with LG Constructors requirements for Hazard Communication as outlined below.

General

The Hazard Communication Standard (HCS) is a performance oriented standard. It sets out broad goals, but, unlike many other federal regulatory requirements, it does not stipulate how to meet those goals. It does, however, list the elements that every Hazard Communication Program must include. Under Hazard Communication, each contractor/subcontractor who uses hazardous chemicals must develop:

- A written Hazard Communication Program that spells out how each employer will meet its hazard communication responsibilities.
- An inventory list of all hazardous chemicals on the project.
- A file of Material Safety Data Sheets (MSDS), each of which provides detailed information on the properties, hazards, and safe handling of an individual hazardous chemical or hazardous chemical product.
- A method to ensure that each container of hazardous chemicals has the proper labeling and hazard warnings.
- An information and training program for workers who may be exposed to hazardous chemicals under normal working conditions or in foreseeable emergencies.
- A training procedure for workers who have not received such training and who perform non-routine tasks such as confined-space entry, emergency spill control, or any task involving a hazardous chemical presenting special safety and health risks.
- A method of informing other employers and their employees of hazardous chemicals in the workplace which they may encounter.

Procedure

Chemical Inventory

Each employer shall maintain a current Hazardous Chemicals List on the project (LGF_C8-9.3-43). This list will include the following information:

- The chemical or common name used on the container label or on the MSDS.
- The quantity of the chemical usually stored on site.
- The location where the chemical is usually stored on site.

A Material Safety Data Sheet shall be available for every hazardous chemical on the list.

Material Safety Data Sheets (MSDS)

- Any employer purchasing and using hazardous chemicals shall require the vendor to provide an MSDS for each chemical. An MSDS can also be obtained from the manufacturer.
- This requirement must be communicated to all individuals who obtain hazardous chemicals. Purchase orders shall include in writing the request for the MSDS if required.
- Upon receipt of each MSDS, the original will be maintained on file at the office or project site.
- The designated program coordinator shall maintain a project MSDS notebook (file) in a current and organized manner.
- Should a chemical be received without an MSDS and the chemical is not listed on the Hazardous Chemical List, the office or project will request an MSDS from the distributor or manufacturer of the chemical.
- MSDS's shall be readily available for review by employees, employers, and OSHA representatives upon request.
- MSDS's will be required for, but not limited to, hazardous chemicals contained in general categories including; abrasives, adhesives and/or sealants, asbestos, biologicals, cleaners, coatings, fuels, compressed gases, insulations, lubricants, masonry products, metals, paint products, pesticides, radioactive materials, solvents, welding and soldering products, and treated wood and/or wood dust.
- MSDS's may be provided to workers through computers, the Internet, CD-ROM, and fax machines. If an electronic method is used for maintaining MSDS's, you must ensure that:
    - Reliable devices are readily accessible in the workplace at all times;
    - Workers are trained in the use of the devices, including specific software;
    - There is an adequate backup system in the event of the failure of the system such as power outages or on-line delays; and

- The system is part of the overall hazard communication program of the workplace.

Additionally, workers must be able to access hard copies of the MSDS, and in medical emergencies, you must be able **immediately** to provide copies of MSDS's to medical personnel.

Labels and Warnings

The designated Hazard Communication Coordinator (HCC) shall be responsible for verifying that all containers of hazardous chemicals received on site:

- Are clearly labeled as to contents,
- Display appropriate hazard warnings; and
- Contain the name and address of the manufacturer, importer, or other source of the chemical.

The one exception to the labeling requirement applies to chemicals transferred to portable containers by workers for their immediate use. Appropriate labels must be attached to the portable container if it is to be used by workers other than those who transferred the chemical.

All labels must remain legible, prominently displayed, and must be written in English and Spanish.

All supervisors must ensure that their workers understand these warnings and that the MSDS is available for their review upon request.

Employee Information and Training

Employees must be informed of:

- The requirements of the OSHA Hazard Communication Standard.
- Any operations in their work areas where hazardous chemicals are present.
- The location and availability of the Written Hazard Communication Program, Hazardous Chemicals List, and MSDS's for the chemicals with which they work or to which they may be exposed.

Employees shall receive initial general training of the following:

- How to read labels and review MSDS's to obtain appropriate hazard information. This may be best accomplished by reviewing actual container labels and MSDS's for chemicals used on-site. The MSDS provides the name of the chemical, how to use and store it, how to handle an emergency, what the hazards of the chemical are, and where to get more information about it. ALL EMPLOYEES MUST KNOW HOW TO READ AND UNDERSTAND A MATERIAL SAFETY DATA SHEET (MSDS).
- Physical and health effects of hazardous chemicals.

- Types of exposures (acute or chronic) and routes of entry (inhalation, absorption, and ingestion).
- Methods and observational techniques used to determine the presence or release of hazardous chemicals in the work area including odors, appearance, labels, or information contained in the MSDS.
- How to lessen or prevent exposure to hazardous chemicals by using safe work methods and personal protective equipment.
- Emergency procedures to follow if exposed to hazardous chemicals.

Category and Specific Training

Employees are required to receive specific training for each hazardous chemical they may be expected to use or encounter prior to work with the material. If specific training is not provided, training must be provided for categories of hazards including physical (flammables, combustibles, and compressed gases) and health (carcinogens, corrosives, asphyxiates, irritants and/or sensitizers, oxidizers, and explosives).

- Carcinogens present a health hazard that requires special attention. Review the Hazardous Chemical List and MSDS's to determine if any carcinogens or suspected carcinogens are present on site. If a hazardous chemical is a suspected carcinogen, the label should so indicate. Workers must be instructed that specific training, including a review of the MSDS, must be completed before using the chemical.
- Corrosives are any chemicals that cause visible destruction of living tissue at the site of contact. Acids and caustics are corrosive and require special personal protective equipment such as safety glasses or goggles, protective clothing, chemical resistant gloves, and face shields.
- An asphyxiate is generally defined as any agent which causes a lack of oxygen in the worker's breathing zone. Confined spaces have this potential and must be tested before entry and periodically during entry. Argon, used frequently to purge, is commonly associated with asphyxiation.
- Irritants and sensitizers are associated with inflammation of living tissue and allergic reactions following repeated exposure. When using such chemicals wear appropriate personal protective equipment. Many workplace chemicals and procedures involve either irritants or sensitizers, including solvents, fuels, insulation, Portland cement, cutting oils, thinners, epoxies, and arc welding.
- Oxidizers are chemicals that may react violently with flammables, combustibles, or water. A review of the Hazardous Chemical List and MSDS's will aid in determining the need for additional training.
- Explosives are chemicals that cause a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature. Explosives require specific training.

- Additional training shall be provided when new hazardous chemicals are brought on site if the initial training did not adequately address the hazards. This training may be specific and must be provided to those workers expected to work with or be exposed to the hazards, or provided to all workers (for example, as a weekly "tool box" topic). If review of an MSDS and the hazards associated with a chemical reveal a special concern regarding employee safety and health, specific training shall be provided to workers who will work with that chemical.
- Training shall be provided workers in the use of electronic equipment/devices, including specific software, when electronic method is used to maintain MSDS.

Hazardous Non-Routine Tasks

Occasionally workers will be assigned a task that is not routine. For example, workers may be required to work in a confined space, or with a chemical they have not used before. Before starting such work, every worker involved will be given such information as is necessary to enter and work safely within the confined space or with the chemical. No employee is to begin work at a non-routine task without first being briefed on any hazards that may be involved in the performance of such an assignment. After receiving such training, workers are not to begin work unless their immediate supervisor is aware of their activity.

Multi-Employer Projects

The HCC shall provide a copy of this program, the inventory and the MSDS's on file for hazardous chemicals used on site by subcontractors. These MSDS's shall be available for review by other employers who may have workers exposed to hazardous chemicals. The primary responsibility for hazard communication shall remain with each employer using hazardous chemicals. Los Esteros Critical Energy (owners) is required to provide hazard information to contractors who have workers who may be exposed to the hazards generated by Los Esteros Critical Energy (owner).

10.3.1 Chemical Hazards

Active plant operations may pose chemical hazards during construction activities. LG Constructors will comply with the facility's Process Safety Management Plan when potential exposure to these chemicals is present during construction activities. The hazards posed by the remaining chemicals used in the facility will be communicated to project personnel using the facility's hazard communication procedures. Copies of MSDSs for hazardous chemicals used at the facility will be immediately available for project personnel. These chemicals may include alum, chlorine dioxide, copper sulfate, ferric sulfate, potassium permanganate, sodium hydroxide, and sulfuring acid. Startup operation of constructed facilities using hazardous chemical may include ferric sulfate, hydrogen peroxide feed systems, along with an Ozone Generator facility. The following sections summarize these chemical hazards.

10.3.2 Bloodborne Pathogens

Exposure to bloodborne pathogens may occur when rendering first aid or CPR, or when coming into contact with landfill waste or waste streams containing potentially infectious material. Exposure controls and personal protective equipment (PPE) are required as specified in LG

Constructors SOP HSE&Q-202, *Bloodborne Pathogens*. Hepatitis B vaccination must be offered before the person participates in a task where exposure is a possibility.

- To eliminate or minimize employee exposure to bloodborne pathogens, observe the following engineering and work practice controls, recommended vaccinations, and personal protective equipment.

Training and Medical Requirements

- All employees covered by this section must complete LG Constructors 1-hour bloodborne computer-based training module annually.
- Hepatitis B vaccine (HBV) is offered to employees who may be exposed to potentially infectious materials (PIMs) when they complete training and within 10 working days of assignment. (Note: Employees whose exposure stems only from rendering first aid as a collateral duty receives the vaccine after exposure.)
- Tetanus vaccines are offered to those employees who work around and are exposed to raw sewage.
- Employees who decline the HBV vaccine must sign the declination form (contact regional Safety Program Assistant [SPA]) indicating they declined the vaccination. Anyone who declines the vaccination and chooses to receive the vaccination at a later time may still receive the vaccination by contacting the SPA.
- Hepatitis B and tetanus vaccinations can be requested by completing the medical portion of the enrollment form, located under Tools & Forms at the HS&E web page, or by contacting the regional SPA.

Work Practice Controls and PPE

- Observe universal precautions to prevent contact with blood or other PIMs. Where differentiation between body fluid types is difficult or impossible, consider all body fluids to be potentially infectious materials.
- Consider all sharps encountered at industrial, medical, dental, or biological waste facilities or sampling locations to be contaminated and PIMs.
- Always wash your hands and face with soap and running water after contacting PIMs. If washing facilities are unavailable, use an antiseptic cleanser with clean paper towels or moist towelettes. These must be provided for employees who have been exposed to PIMs. When antiseptic cleansers or towelettes are used, always rewash your hands and face with soap and running water as soon as available. Do not consume food or beverages until after thoroughly washing your hands and face.
- Decontaminate all potentially contaminated equipment and environmental surfaces with chlorine bleach as soon as possible. Clean and decontaminate on a regular basis (and immediately upon visible contamination) all bins, pails, cans, and other receptacles intended for reuse that have the potential for becoming contaminated.
- Use one part chlorine bleach (5.25 percent sodium hypochlorite solution) diluted with 10 parts water for decontaminating equipment or surfaces after initially removing blood or other PIMs. Remove contaminated PPE as soon as possible before leaving a work area.

- Place regulated waste in containers that are closable; are constructed to contain all contents and prevent leakage of fluids during handling, storage, transport or shipping; are labeled or color-coded; and are tightly closed prior to removal to prevent spillage or protrusion of contents during handling, storage, transport, or shipping.
- Employees who participate in waste characterization studies, sort or sample refuse, or contact medical, dental, or biological wastestreams should follow these procedures:
  - If exposure is anticipated, this group of employees should wear safety goggles or glasses, puncture-resistant utility gloves with inner nitrile glove liners, Tyvek coveralls or cotton coveralls with a rubber apron, and puncture-resistant shoes or boots.
  - If splash potential is present, employees should wear a full-face shield.
  - If a respiratory hazard is present, a full-face respirator with HEPA filters should be worn.

Post Exposure

LG Constructors will provide exposed employees with a confidential medical examination. This examination includes the following procedures:

- Documenting the exposure
- Testing the exposed employee's and the source individual's blood (with consent)
- Administering post-exposure prophylaxis
- Evaluating any reported illness

If the exposed employee consents to blood collection but does not give consent for testing, the sample will be preserved for 90 days. The employee can give consent any time during the 90 days.

If the source individual does not consent to testing, LG Constructors will establish that consent cannot be obtained. If consent to collect the blood is obtained but consent to test is not, the blood sample will be preserved for 90 days. If within 90 days the source individual agrees to testing, the blood will be tested. Results of the source individual's testing are made available to the exposed employee's physician. Within 15 days of the completed examination, LG Constructors will verify that the employee has been informed of the results.

10.3.3 Hexavalent Chromium (Cr VI) Exposure

The OSHA permissible exposure limit (PEL) and ACGIH Threshold Limit Value (TLV) for Chromium VI is 5 ug/m^3 (insoluble) and 1 ug/m^3 (soluble) with an action level (AL) of 2.5 ug/m3 for insoluble and 0.5 ug/ m^3 for soluble. Hexavalent Chromium is considered a Human Carcinogen.

The precautions listed below shall be followed when exposed to Cr VI:

- Exposure assessments must be performed for workers who may be exposed to Cr VI above the AL.
- Avoid exposure by inhalation, skin and eye contact with fume, liquid and/or particulate Cr VI.
- Respiratory protection and other exposure controls selection shall be based on the most recent exposure monitoring results obtained from the competent person.

- Do not enter regulated work areas unless training, medical monitoring, and PPE requirements established by the competent person have been met.
- Do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in regulated areas.

10.4 Outdoor Exposures

Operations conducted outdoors may expose workers to weather, ecological hazards and other location-related hazards. The following sections summarize these hazards.

10.4.1 Heat Stress

- Drink 16 ounces of water before beginning work. Disposable cups and water maintained at 50°F to 60°F (10° – 16 ° C) should be available. Under severe conditions, drink 1 to 2 cups every 20 minutes, for a total of 1 to 2 gallons per day. Do not use alcohol in place of water or other nonalcoholic fluids. Decrease your intake of or avoid consumption of coffee, carbohydrate-rich beverages, and caffeinated soft drinks during working hours.
- Acclimate yourself by slowly increasing workloads (e.g., do not begin with extremely demanding activities).
- Use cooling devices, such as cooling vests, to aid natural body ventilation. These devices add weight, so their use should be balanced against efficiency.
- Use mobile showers or hose-down facilities to reduce body temperature and cool protective clothing.
- Avoid direct sun whenever possible, which can decrease physical efficiency and increase the probability of heat stress. Take regular breaks in a cool, shaded area. Use a wide-brim hat cover over your hard hat if possible when working under direct sun for extended periods.
- Provide adequate shelter/shade to protect personnel against radiant heat (sun, flames, hot metal).
- Maintain good hygiene standards by frequently changing clothing and showering.
- Observe one another for signs of heat stress. Persons who experience signs of heat syncope, heat rash, or heat cramps should consult the SC to avoid progression of heat-related illness.

SYMPTOMS AND TREATMENT OF HEAT STRESS					
	Heat Syncope	Heat Rash	Heat Cramps	Heat Exhaustion	Heat Stroke
Signs & Symptoms	Sluggishness or fainting while standing erect or immobile in heat.	A skin irritation caused by excessive sweating during hot, humid weather. Profuse tiny raised red blister-like vesicles on affected areas, along with prickling sensations during heat exposure.	Painful spasms in muscles used during work (arms, legs, or abdomen); onset during or after work hours.	Fatigue, nausea, headache, giddiness; skin cool, moist and/or clammy; complexion pale, muddy, flushed or red skin; may faint on standing; rapid thready pulse and low blood pressure; oral temperature normal or low	**Life threatening.** Red, hot, dry skin; dizziness; confusion; rapid breathing and rapid weak pulse; high oral temperature (as high as 105 degrees F)
Treatment	Remove to cooler area. Rest lying down. Increase fluid intake. Recovery usually is prompt and complete.	Keep skin clean and dry and preventing infection. Avoid using ointments or creams as they keep the skin warm and moist and may make the condition worse.	Remove to cooler area. Rest lying down. Increase fluid intake.	Remove to cooler area. Remove or loosen tight clothing and apply cool, wet cloths such as towels or wet sheets. Rest lying down, with head in low position. If person s awake and alert, give a half glass of cool water every 15 minutes. Do not let them drink too quickly. Seek medical attention.	**CALL 911 or local Emergency Medical Services** Move the person to a cooler place. Keep the person lying down. Quickly cool the body by wrapping wet sheets around the body and fan it. If you have ice packs or cold packs, wrap them in a cloth and place then on each victim's wrists and ankles, in the armpits and on the neck to cool the large blood vessels. Watch for signals of breathing problems and make sure the airway is clear.

Monitoring Heat Stress

These procedures should be considered when the ambient air temperature exceeds 70°F, the relative humidity is high (>50 percent), or when workers exhibit symptoms of heat stress. The heart rate (HR) should be measured by the radial pulse for 30 seconds, as early as possible in the resting period. The HR at the beginning of the rest period should not exceed 100 beats/minute, or 20 beats/minute above resting pulse. If the HR is higher, the next work period should be shortened by 33 percent, while the length of the rest period stays the same. If the pulse rate still exceeds 100 beats/minute at the beginning of the next rest period, the work cycle should be further shortened by 33 percent. The procedure is continued until the rate is maintained below 100 beats/minute, or 20 beats/minute above resting pulse.

10.4.2 Cold Stress

- Be aware of the symptoms of cold-related disorders, and wear proper, layered clothing for the anticipated fieldwork. Appropriate rain gear is a must in cool weather.

- Monitor the work conditions and adjusting the work schedule using guidelines developed by the U.S. Army (wind-chill index), the National Safety Council (NSC), and the American Conference of Governmental Industrial Hygienists (ACGIH).
- Wind-Chill Index is used to estimate the combined effect of wind and low air temperatures on exposed skin. The wind-chill index does not take into account the body part that is exposed, the level of activity, or the amount or type of clothing worn. For those reasons, it should only be used as a guideline to warn workers when they are in a situation that can cause cold-related illnesses.
- NSC Guidelines for Work and Warm-Up Schedules can be used with the wind-chill index to estimate work and warm-up schedules for fieldwork. The guidelines are not absolute; workers should be monitored for symptoms of cold-related illnesses. If symptoms are not observed, the work duration can be increased.
- Persons who experience initial signs of immersion foot, frostbite, hypothermia should consult the SC to avoid progression of cold-related illness.
- Observe one another for initial signs of cold-related disorders.
- Obtain and review weather forecast – be aware of predicted weather systems along with sudden drops in temperature, increase in winds, and precipitation.

SYMPTOMS AND TREATMENT OF COLD STRESS			
	Immersion (Trench) Foot	**Frostbite**	**Hypothermia**
Signs and Symptoms	Feet discolored and painful; infection and swelling present.	Blanched, white, waxy skin, but tissue resilient; tissue cold and pale.	Shivering, apathy, sleepiness; rapid drop in body temperature; glassy stare; slow pulse; slow respiration; blue lips and fingers.
Treatment	Seek medical treatment immediately.	Remove victim to a warm place. Re-warm area gradually by body heat, without rubbing. If fully conscious, have victim drink warm fluids, but **not** coffee or alcohol. Do not break blisters. Elevate the injured area, and get medical attention.	Remove victim to a warm place. Remove wet clothing and wrap victim in warm covers. Dress blisters in sterile dressings. If fully conscious, have victim drink warm fluids, but **not** coffee or alcohol. Get medical attention immediately.

10.4.3 Ultraviolet Radiation/Sun Exposure

Significant exposure to the sun (ultraviolet radiation) may cause skin and eye burns and some cancers (long term). The following precautions should be taken to reduce risk of injury from ultraviolet (UV) exposure.

Potential Biological Effects

Health effects regarding UV radiation are confined to the skin and eyes. Overexposure can result in many skin conditions, including erythema (redness or sunburn), photoallergy (skin rash), phototoxicity (extreme sunburn acquired during short exposures to UV radiation while on certain medications), premature skin aging, and numerous types of skin cancer.

Acute overexposure of the eyes may lead to photokeratitis (inflammation of the cornea), also known as snow blindness. Snow blindness is basically a sunburn of the cornea (transparent front

part of the eye). Symptoms include redness of the eyes and a gritty feeling, which progresses to pain and an inability to tolerate any kind of light. Fortunately, snow blindness is usually only temporary. This condition can also occur when working in or around water and other UV radiation reflectors. In such situations, the combination of direct and reflected sunlight results in double exposure. In addition, long-term exposure to sunlight is thought to cause cataracts or clouding of the lens of the eye.

Control Measures

- Avoid exposure to the sun, or take extra precautions when the UV index rating is high. The National Weather Service's daily UV index predicts how long it would take a light-skinned person to get sunburn if exposed and unprotected, to the noonday sun, given the geographical location and the local weather. Ratings range from 1 (about 60 minutes before the skin will burn) to a high of 10 (about 10 minutes before the skin will burn).
- Limit exposure time when UV radiation is at peak levels. Approximately 60 percent of the daily UV radiation reaching the earth's surface arrives 2 hours before and after the sun is at its highest point in the sky. Minimizing exposure during this time period will significantly reduce UV radiation exposure.
- Take lunch and breaks in shaded areas. Use the shade from existing buildings, trees, and other objects when available. Create shade or shelter through the use of umbrellas, tents, and canopies. Rotate staff so the same personnel are not exposed all of the time.
- Reduce UV radiation damage by wearing proper clothing; for example, long-sleeved shirts with collars and long pants. The fabric should be closely woven and should not let light through. Natural fibers such as cotton are more comfortable because they allow sweat to evaporate better than synthetic fabrics.
- Head protection should be worn to protect the face, ears, and neck. Wide-brimmed hats with a neck flap or “Foreign Legion” style caps offer added protection. A flap of fabric may be added to the back of a hardhat to protect the neck during bending.
- Wear UV-protective sunglasses or safety glasses. These should fit closely to the face. Wrap-around style glasses provide the best protection.
- Apply sunscreen generously to all exposed skin surfaces at least 20 minutes before exposure. Re-apply sunscreen at least every 2 hours, and more frequently when sweating or performing activities where sunscreen may be wiped off. A sunscreen's sun protection factor (SPF) measures how well the product blocks UV radiation. A sunscreen with a SPF rating of 15 blocks about 90 percent of UV radiation, while SPF 30 sunscreens block approximately 97 percent. A broad-spectrum sunscreen with a SPF 15 rating is considered the minimum effective sunscreen. Most dermatologists advocate SPF 30 or higher for significant sun exposure. Waterproof sunscreens should be selected for use in or near water and by those who perspire sufficiently to wash off non-waterproof products. Check for expiration dates because most sunscreens are only good for about 3 years. Store in a cool place out of the sun. Remember that no sunscreen provides 100 percent protection against UV radiation. Other precautions must be taken to avoid overexposure.

11.0 Personal Protective Equipment

11.1 General Information

When actual or potential hazards exist and engineering controls or safe work practices cannot eliminate the hazard, employees shall use PPE.

Employees are responsible to:

- Wear the necessary PPE required for the project
- Complete the appropriate training to learn the proper use and care
- Use PPE as required in the project-specific written safety plan
- Inspect PPE prior to use and maintain it in a clean and safe condition
- Do not modify, tamper with, or repair PPE beyond routine maintenance
- Inform the employer of equipment that they believe does not adequately protect them from actual or potential hazards

11.2 Hazard Assessment

The employer shall identify actual or potential hazards and the need for PPE. Two conditions typically dictate the necessity for PPE: general hazards present in the work area, and hazards created by the tasks being performed. Some work areas have actual or potential hazards that can be present at any time, thereby potentially exposing any personnel working or walking through the area. Such areas should be posted as PPE-required areas, or personnel should be informed of the requirements in an equivalent manner. In addition, the actual task being performed may create a hazard and require personnel who perform this task to wear appropriate PPE. The areas where these tasks are taking place may become PPE required areas as long as that specific task is taking place.

Personnel must comply with the PPE requirements as specified in the following table.

Note that PPE is required when exposed to the general hazards listed below. Because certain tasks (e.g., welding, energized work, etc.) require specialized PPE, an accessment share be conducted for task specific PPE requirements.

PPE SPECIFICATIONS A

Hazard	PPE
General entry to active industrial facility or construction site, or when required by client/facility.	- All leather above the ankle safety toed work boots with slip resistant soles are required for this project. The boots must meet the requirements of ASTM F2412-05,ASTM F2413-05, and the ANSI Z41 standards. - ANSI Z87 rated safety glasses - Hand protection (appropriate gloves as

	identified in THA or minimum level of protection required by project) - Hardhat. - At a minimum, employees must wear full length trousers and t-shirts with minimum 4-inch sleeves. These items must be with employee at all times while at the project.
Skin absorption of harmful substances, chemical burns, thermal burns and harmful temperature extremes.	Nitrile, or other appropriate ANSI rated chemical-resistant gloves for protection against contact with chemicals or other harmful substances.
Work involving direct exposure to sewage.	- elbow-length rubber gloves or nitrille water protective inner glove and puncture resistant outer glove; - rubber pants and jackets or coated Tyvek coveralls: - goggles; - disposable mask to be worn in dusty sludge areas or areas with heavy aerosols;
Working around heavy equipment or other noisy machinery, or if you must raise your voice to be heard while communicating with persons near you, hearing protection is required. [c]	ANSI approved ear plugs or earmuffs.
Danger of foot injuries due to falling or rolling objects, objects piercing the sole, or when the feet are exposed to electrical hazards.	All leather above the ankle safety toed work boots with slip resistant soles are required for this project. The boots must meet the requirements of ASTM F2412-05,ASTM F2413-05, and the ANSI Z41 standards.
Potential for head injury from impact, falling or flying objects.	ANSI approved hardhat.
Flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation. [b]	ANSI approved safety glasses with side shield, safety goggles, face shield, or welding glasses. Face shield may be used only in conjunction with the use of other protective eyewear.
Work near vehicular traffic ways or earth moving equipment.	Appropriate level of ANSI/ISEA 107-2004 high-visibility clothing.
Work over or near water and process liquid streams	U.S. Coast Guard-approved personal flotation devices (PFDs) A minimum of one ring buoy with 90 feet of 3/8-inch solid-braid polypropylene (or equal) rope must be provided for emergency rescue.

Reasons for Upgrading or Downgrading Level of Protection

Upgrade[a]	Downgrade
Request from individual performing tasks	Situation is less hazardous than originally thought
Change in work tasks that will increase potential for injury	Change in site conditions that decreases the hazard
	Change in work task that will reduce potential for injury

Known or suspected presence of dermal hazards

[a] Performing tasks that require respiratory protection is permitted only when the PPE requirements have been approved by the Safety Officer, and a SC-C qualified at that level is present.

11.3 Training

LG Constructors requires each PPE user to receive training on the proper care, maintenance, limitations, and instructions on how to wear and adjust PPE. The proper use of PPE should also be included in project safety briefings and toolbox meetings.

12.0 Safety Inspections

In addition to the hazard controls specified in this document, Project Activity Self-Assessment Checklists are contained in the SC Implementation Package. Any site-specific requirements outlined in this FSI that are more stringent than those contained in the Project-Activity Self-Assessment Checklists are to take precedence. The Project-Activity Self–Assessment Checklists are based upon minimum regulatory compliance and some site-specific requirements may be more stringent. Each subcontractor shall provide their own checklists to be used weekly to assess the adequacy of site-specific safety requirements and determine if employees will be safe. The objective of the self-assessment process is to identify gaps in project safety performance, and prompt for corrective actions in addressing these gaps. The self-assessment checklists, including documented corrective actions, shall be made part of the permanent project records and maintained by the SC.

The self-assessment checklists will also be used by the SC and the safety committee in evaluating the contractors' compliance on site.

If hazardous conditions exist or are apparent during the self-assessment, immediately notify the employees in the area and do not continue work in that area. If an imminent danger situation exists, that which is immediately life threatening or would cause serious injury, immediately stop work and warn the contractor employee(s) in danger and notify the contractor safety representative and report it to the SC.

Self-assessment checklists should be completed and permit-to-work reviewed prior to exposure of the activities outlined below. Self-assessments shall be completed prior to subjecting personnel to hazardous operations for any reason. Follow-up self-assessments shall be conducted on a weekly basis and more frequent if conditions warrant.

The following list of hazardous activities are those most commonly found on construction sites. Each of the following Project Activity Self-Assessment Checklists are found in the SC Implementation Package. The SC is responsible for identifying site-specific hazardous activities not included in this list (for example: chlorine safety, tunneling, traffic control, etc.) and informing the HSM. The HSM and SC shall integrate methods for verifying compliance with established safe work practices, regulations, and industry standards pertaining to those additional site-specific hazardous activities.

- Aerial Lifts
- Concrete and Masonry Construction
- Cranes, Hoists, and Rigging
- Confined Space Entry
- Demolition
- Drilling
- Earthmoving Equipment
- Electrical

- Lock Out/Tag Out
- Excavations
- Fall Protection
- Hand and Power Tools
- Scaffolds
- Steel Erection
- Stairways and Ladders
- Respiratory Protection
- Welding and Cutting

The SC will perform daily site safety inspections to verify that the project is conducted in a safe manner. The SC will keep a daily log to track the health and safety observations. In addition to the SC's daily log, hazards that are discovered by the SC will be documented on the Observed Hazard Form, Stop Work Order Form, or the Health and Safety Audit Findings Table. These documents are found in the SC Implementation Package.

13.0 Safety Training

13.1 LG Constructors Employee Training

The intent of LG Constructors employee training program is to ensure that LG Constructors employees receive the appropriate level of training to conduct their work in a safe manner and to comply with applicable regulations. All employees are required to maintain the training qualification necessary to perform their assigned duties and job functions.

13.2 Project Employee Orientation

Employees expecting to access the site are required to have LG Constructors project employee orientation. The training provided to the employees in the employee orientation shall include:

- Review the FSIs
- Present an overall site safety briefing (general site safety)
- Review employee responsibilities
- Review emergency procedures and evacuation plan
- Review injury and incident reporting procedures
- Review reporting procedures for hazardous conditions and/or hazardous activities

13.3 Safety Meetings (Toolbox/Mass Safety Meetings)

Safety meetings provide a method for maintaining safety awareness and providing safety-related information and training to employees.

Toolbox meetings for project supervisory personnel and project employees shall be held weekly and include relevant information for on- and off-the-job safety. This forum can provide safety related training for employees and a means of addressing issues raised in safety coordination meetings; this meeting requires that minutes be taken and filed according to 5-1.

13.4 Safety Pre-Task Planning and Training

Each day, the onsite supervisors shall hold informational safety training with each member of their crew. Information discussed and training performed shall pertain to current project activities and scope of work. Contractors are encouraged to use this time for employee input and task-specific training (see Attachment 4 Safety Pre-Task Planning Form).

13.5 Vendor Training

Vendors that supply equipment to the project will be required to perform a training session to review and explain the safe operation procedures to the parties that will be using or operating the equipment (e.g., fall protection equipment, confined space entry equipment, scaffolding, aerial lift platforms, powder actuated tools, and power tools).

13.6 Emergency Response Plan Training

Emergency Response Plan (ERP) training will occur during the employee orientation and retraining will occur periodically in safety meetings. The ERP training will include the procedures for reporting to external emergency response organizations (e.g., police, fire department, ambulance services, hospitals, rescue services, and hazardous material response services), building or site evacuation, designated evacuation assembly areas, and methods of accounting for staff upon evacuation. Emergency drills will be performed periodically, but at least twice per year. See Section 16 for the Emergency Preparedness procedures.

13.7 Training Documentation

All training shall be documented. Documentation and certificates verifying completion will be maintained onsite by the employer and copies of the training documentation will be submitted to the SC. Training documentation will be made available for review at all times.

14.0 Safety Committee

The LG Constructors team may develop a project safety committee to address issues pertinent to our activities on site. This committee will meet a minimum of once per month, with more frequent meetings called in the event of a serious incident or other project event.

The committee will be chaired by the SC and will be composed of representative from subcontractors, and site workers. Both management and employees must be represented on the committee with management composing less than 50 percent of the membership.

The committee will review items that affect the health and safety of workers on site and develop/update rules and regulations based on activities and past experience on the worksite.

The committee will conduct a site inspection at least once per month. The date of the site inspection must be at least one week prior to the regularly scheduled committee meeting in order to review the inspection results. All inspection findings and corrective actions will be presented to the committee at the meeting.

It is the committee's responsibility to review all serious incidents, near misses, and dangerous occurrences.

The committee is responsible for organizing the LG Constructors team promotional activities. This includes deciding topics, spreading and reinforcing the message, and always setting a positive example.

Each month, a committee member will give a talk on health and safety at the worksite to promote safety awareness.

The committee secretary must keep records of the meeting minutes and inspection reports. These documents will remain on site until completion of the project. Minutes of the meeting will be copied to the Health and Safety Manager for review.

Meeting agenda will be as follows:

- Confirmation of Minutes
- Matters Arising There from
- Chairman's Review/Overview of Site Safety Performance and/or Condition
- Report from the Secretary
- Report from the SC-C
- Incident and Accident Investigation/Dangerous Occurrence Report
- Safety Talk by Committee Members
- Report from the Health and Safety Manager or OSHA
- Any Other Business

15.0 Incident Reporting, Investigation and Management

15.1 Scope and Application

This section describes requirements for internal notification, report and investigation of all incidents occurring in LG Constructors facilities or projects, including serious incidents.

15.2 Definitions

I**ncidents** are events that cause or could have caused undesired consequences. An incident may be caused by natural forces, employees, subcontractors, or third parties in any location associated with LG Constructors operations, including offices, warehouses, project sites, private property, or public spaces. Incidents include:

- Injury or illness to a LG Constructors employee or subcontractor employee
- Property damage
- Spill or release of hazardous or regulated material
- Environmental or permit violation
- A "near-miss"
- Other (e.g., fire, explosion, bomb threat, workplace violence)

Serious incidents must be immediately reported to senior management. Serious incidents include:

- Work related death, or injury or illness of a LG Constructors employee, subcontractor, or member of the public
- Kidnap/missing person
- Acts or threats of terrorism
- Event that involves a fire, explosion, or property damage that requires a site evacuation or is estimated to result in greater than $ 500,000 in damage.
- Spill or release of hazardous materials or substances that involves a significant threat of imminent harm to site workers, neighboring facilities, the community or the environment.

15.3 Verbal Notification

- For all incidents, employees and subcontractors shall immediately notify the Safety Coordinator ***and*** their direct supervisor.
- The employee, Safety Coordinator or supervisor shall immediately notify the Project/Facility Manager ***and*** the Responsible Health and Safety Manager (RHSM) of all incidents.

- The RHSM shall notify the REM of spills/releases and environmental/permit incidents.

15.4 Hours and Incidents Tracking System

The LG Constructors **Hours and Incidents Tracking System** (HITS) is an online tool for reporting, tracking and trending all LG Constructors and subcontractor incidents.

- The Safety Coordinator shall complete the Incident Report Form (IRF) in the HITS database **within 24 hours** for all non-injury/illness project incidents, including subcontractor incidents.
- The employee's supervisor shall complete the IRF **within 24 hours** for all injury/illness incidents.
- The Power Business Group HSSE Safety Director or designee shall update and evaluate the IRF for accuracy and completeness, consistent with company and regulatory requirements.

15.5 Injury Management

Injury management provides for the orderly, effective and timely medical treatment and return-to-work transition of an employee who sustains a work-related injury or illness, and programs should be established throughout the company that are aligned with office locations and worker compensation laws.

The Injury Management/Return-to-Work program applicable to all LG Constructors employees in the United States is as follows:

- All employees must immediately report workplace injuries/illnesses however minor, to their supervisor.
- When non-emergency work-related injuries or illnesses occur, the employee's supervisor, Operation or Group Leader must call or ensure the injured/ill employee calls the Injury Management/Return-to-Work toll-free number (866-893-2514). Also a pre determined medical clinic will be approved for the employee to receive medical attention if necessary.
- The appropriate treatment and case management of the employee's injury/illness will be assessed, and the ability to assume work duties in a timely manner determined.

15.6 Investigation

The purpose of an incident investigation is to understand how the incident happened, analyze the root causes, and prevent recurrence by implementing corrective actions and distributing lessons learned.

- Incident investigations shall be initiated by the supervisor or Project Manager and completed as soon as possible, but no later than 72 hours after the incident has occurred.
- Except for serious incidents, the RHSM or REM (depending on the type of incident) shall be responsible for determining the level of the investigation. The RHSM/ECC may conduct the investigation directly or may delegate this function to the Safety Coordinator.
- Non-serious investigations shall be documented by updating the HITS form.
- The Project Manager/Facility Manager shall implement all corrective actions.

- The RHSM/REM shall distribute lessons learned as needed and verify that corrective actions are implemented to prevent further incidents.

15.7 Incident Root Cause Analysis

The accident analysis is essential if all causes of the incident are to be identified for the correct remedial actions to be taken to prevent the same and similar type of incident from recurring. The investigation team will consist of the SC, the responsible supervisor, and the safety committee.

The Root Cause Analysis Form must be completed for all Loss Incidents and Near Loss Incidents. This form must be submitted to the investigation team for review.

For minor losses or near losses, the information may be gathered by the supervisor or other personnel immediately following the loss. Based on the complexity of the situation, this information may be all that is necessary to enable the investigation team to analyze the loss, determine the root cause, and develop recommendations. More complex situations may require the investigation team to revisit the loss site or re-interview key witnesses to obtain answers to questions that may arise during the investigation process.

Photographs or videotapes of the scene and damaged equipment should be taken from all sides and from various distances. This point is especially important when the investigation team will not be able to review the loss scene.

The investigation team must use the Root Cause Analysis Flow Chart to assist in identifying the root cause(s) of a loss. Any loss may have one or more root causes and contributing factors. The root cause is the primary or immediate cause of the incident, while a contributing factor is a condition or event that contributes to the incident happening, but is not the primary cause of the incident. Root causes and contributing factors that relate to the person involved in the loss, his or her peers, or the supervisor should be referred to as “personal factors.” Causes that pertain to the system within which the loss or injury occurred should be referred to as “job factors.”

15.7.1 Personal Factors

- Lack of skill or knowledge
- Correct way takes more time and/or requires more effort
- Short-cutting standard procedures is positively reinforced or tolerated
- Person thinks there is no personal benefit to always doing the job according to standards

15.7.2 Job Factors

- Lack of or inadequate operational procedures or work standards
- Inadequate communication of expectations regarding procedures or standards
- Inadequate tools or equipment

The root cause(s) could be any one or a combination of these seven possibilities or some other uncontrollable factor. In the vast majority of losses, the root cause is very much related to one or more of these seven factors. Uncontrollable factors should be used rarely and only after a thorough review eliminates all seven other factors.

15.8 Corrective Actions

Include all corrective actions taken or those that should be taken to prevent recurrence of the incident. Include the specific actions to be taken, the employer and personnel responsible for implementing the actions, and a timeframe for completion. Be sure the corrective actions address the causes.

Once the investigation report has been completed, the PM shall hold a review meeting to discuss the incident and provide recommendations. The responsible supervisors shall be assigned to carry out the recommendations, and shall inform the SC upon successful implementation of all recommended actions.

16.0 Emergency Preparedness

An emergency may be an injury to a worker, an explosion, evacuation, fire, or chemical release. Employees must know what to do if an emergency occurs. This requires pre-planning and communication of these plans to employees. An Emergency Action plan has been prepared and is part of the site specific safety plan.

16.1 Pre-Emergency Planning

- The SC performs the applicable pre-emergency planning tasks before starting field activities and coordinates emergency response with LG Constructors onsite parties, the facility, and local emergency-service providers as appropriate (For additional Emergency Planning, reference LG Constructors SOP HSE-106 *Emergency Planning*)
- Review the facility emergency and contingency plans where applicable
- Determine what onsite communication equipment is available (e.g., two-way radio, air horn)
- Determine what offsite communication equipment is needed (e.g., nearest telephone, cell phone)
- Confirm and post emergency telephone numbers, evacuation routes, assembly areas, and route to hospital; communicate the information to onsite personnel
- Communicate emergency procedures for personnel injury, exposures, fires, explosions, and releases
- Field Trailers: Post "Exit" signs above exit doors, and post "Fire Extinguisher" signs above locations of extinguishers
- Keep areas near exits and extinguishers clear
- Designate one vehicle as the emergency vehicle; place hospital directions and map inside; keep keys in ignition during field activities
- Inventory and check site emergency equipment, supplies, and potable water

Also, it is of the utmost importance that we carefully coordinate all of our emergency activities, particularly natural disasters, with our Information Technology groups. Be sure to include them, beginning in the planning stages.

16.2 Emergency Equipment and Supplies

The SC will verify that these supplies are available, as needed, and in proper working order and mark the locations of emergency equipment on the site map when a map is provided.

TABLE 16-1
Emergency Equipment and Supplies

Emergency Equipment and Supplies	Location
20 lb (9 kg)(or two 10-lb (4.5 kg)) fire extinguisher (A, B, and C classes)	
First aid kit	
Personal eye wash	
Potable water	
Bloodborne-pathogen kit	
Additional equipment (specify):	

16.3 Emergency Response

In fires, explosions, or chemical releases, actions to be taken include the following:

- Shut down LG Constructors operations and evacuate the immediate area
- Notify appropriate response personnel
- Account for personnel at the designated assembly area(s)
- Assess the need for site evacuation, and evacuate the site as warranted
- Instead of implementing a work-area evacuation, note that small fires or spills posing minimal safety or health hazards may be controlled

16.4 Evacuation Procedures

- Evacuation routes and assembly areas will be designated by the SC before work begins
- Personnel will assemble at the assembly area(s) upon hearing the emergency signal for evacuation
- The SC and a “buddy” will remain on the site after the site has been evacuated (if safe) to inform local responders of the nature and location of the incident
- The SC will account for all personnel at the assembly area
- The SC will write up the incident as soon as possible after it occurs and submit a report to the Power BG Director of Health and Safety

16.5 Emergency Medical Treatment

The procedures listed below may also be applied to non-emergency incidents. Injuries and illnesses (including overexposure to contaminants) must be reported to Human Resources. If there is doubt about whether medical treatment is necessary, or if the injured person is reluctant to accept medical treatment, contact the LG Constructors medical consultant.

Emergency contact information for the site office personnel and local vendors are included in the Emergency Contacts Table below and in the Project Contacts List.

Follow these procedures as appropriate:

- Notify appropriate emergency response authorities listed in Emergency Contacts
- Report the incident to the SC (the SC will notify the RHSM). Provide the following information:
    - Your name and telephone number (including extension).
    - The nature of the emergency.
    - The exact location of the emergency and any information you may have about the victim or other persons involved.
    - The name, sex and approximate age of the victim (as much as known).
    - The nature of the injury or illness.
    - Is the victim:
        1. Conscious
        2. Breathing without assistance
        3. Bleeding
- Do not move the victim.
- The SC will assume charge during a medical emergency until the ambulance arrives or until the injured person is admitted to the emergency room. If possible, have someone meet responding personnel to lead them to the victim's location.
- Prevent further injury
- Initiate first aid and CPR where feasible
- Get medical attention immediately
- Make certain that the injured person is accompanied to the emergency room
- If the injured is a LG Constructors employee, the SC or PM must accompany the injured LG Constructors employee to the emergency room and to any follow-up appointments until the injured is released to full duty.

- When contacting the medical consultant, state that the situation is a LG Constructors matter, and give your name and telephone number, the name of the injured person, the extent of the injury or exposure, and the name and location of the medical facility where the injured person was taken
- Report incident as outlined in Incident Notification and Reporting section

16.6 Emergency Notification Flow Chart

The following Emergency Evacuation Flow Chart has been established for communicating incidents or accidents that may require an emergency evacuation.

Emergency Notification Flow Chart

Field Incident or Emergency Occurs

↓

Eyewitness communicates event to LG Constructors PM and/or SC

↓

LG Constructors PM and/or SC communicates required actions to all field personnel

↓

Field personnel stop work and proceed to previously designated Evacuation and Assembly Area if path is safe and available from the work areas. Otherwise, exit work area and move to a safe area outside or along the construction perimeter. Project employees will create a mustering point where supervisors can perform a headcount. The headcount will be given to LG Constructors PM and/or SC.

↓

Field personnel follow evacuation direction from LG Constructors PM and/or SC

All events will not necessarily constitute a site evacuation, and will be determined by the SC and the PM. LG Constructors will communicate required actions to all subcontractor supervisors who will in turn follow the procedures as directed.

Emergency Contacts

In the event of a Serious Incident:

- fatality, critical injuries,
- kidnap/missing person,
- event that involves a fire, explosion, or property damage that requires a site evacuation or is estimated to result in greater than $ 500,000 in damage.
- Spill or release of hazardous materials or substances that involves a significant threat of imminent harm to site workers, neighboring facilities, the community or the environment.

Immediately Contact the Crisis Manager

Medical Emergency –
Facility Medical Response #:
Local Ambulance #:

Fire/Spill Emergency –
Facility Fire Response #:
Local Fire Dept #:

LG Constructors Medical Consultant
Dr. Peter Greaney, Workcare
866-893-2514

Security & Police –
Facility Security #:
Local Police #:

Occupational Clinic
Street Address
City, State, Zip
Hours: Hours of operation
Phone: Number

Utilities Emergency
Water:
Gas:
Electric:

Health & Safety Manager (HSM)
Name: Name
Phone: Number

Environmental Manager
Name: Name
Phone: Number

Safety Coordinator (SC)
Name: Name
Phone: Number

Regional Human Resources Department
Name: Name
Phone: Number

Project Manager (PM)
Name: Name
Phone: Number

Media Inquiries Corporate Strategic Communications
Name:
Phone:

Federal Express Dangerous Goods Shipping
Phone: 800/238-5355

LG Constructors Emergency Number for Shipping Dangerous Goods
Phone: 800/255-3924

Worker's Compensation:

Automobile Accidents:
Rental

LG Constructors Owned or Fleet Vehicle

Worker's Compensation and Auto Claims Administrator:

Specialty Risk Services

Facility Alarms: Explain facility alarms - ***Examples:***

Evacuation Assembly Area(s): ***Example:***

Facility/Site Evacuation Route(s): ***Example:***

Hospital Name/Address: Hospital Name/Street Address

Hospital Phone #: Phone Number

Directions to Hospital

Directions to Hospital

Directions to Medical Clinic

Directions to Medical Clinic

MAP TO HOSPITAL AND MEDICAL CLINIC

INSERT MAP HERE

SITE EVACUATION ROUTES

INSERT SITE EVACUATION ROUTES HERE

CHEMICAL RESPONSE AND EVACUATION INFORMATION

INSERT CHEMICAL RESPONSE AND EVACUATION INFORMATION HERE

16.7 Emergency Preparedness Training

The emergency response plan will be reviewed during the employee orientation and occasionally during site safety briefings. The briefings should include:

- Emergency procedures for fires, explosions, chemical and vapor releases, personnel injuries, and suspected overexposure as they apply to the site
- Location of onsite emergency equipment and supplies of clean water
- Local emergency contacts, hospital routes, evacuation routes, and assembly points
- Site communication and location of phone nearest to the site
- Names of onsite personnel trained in first-aid and CPR
- Procedures for contacting LG Constructors medical consultant and occupational physician(s)

Emergency drills will be performed periodically, but at least twice per year (initially within the first 90 days of construction). Upon completion of each drill, an evaluation shall be made of the ERP to determine its effectiveness. Any problems or concerns identified during the evaluation will be corrected.

17.0 Approval

This FSI has been written for use by LG Constructors and their subcontractors only. LG Constructors claims no responsibility for its use by others unless that use has been specified and defined in project or contract documents. The FSI is written for the specific site conditions, purposes, dates, and personnel specified and must be amended if those conditions change.

17.1 Original Plan

Written By: Bryon Creech **Date:** January 2011

Approved By: Field Operations Manager Name **Date:** Month, Year

17.2 Revisions

Revisions Made By: **Date:**

Revisions to Plan:

Revisions Approved By: **Date:**

LG Constructors FSI

Attachment 1

Employee Signoff Form

LG Constructors

EMPLOYEE SIGNOFF FORM

- **The LG Constructors project employees and subcontractors listed below have been provided with a copy of this FSI, have read and understood it, and agree to abide by its provisions.**
- **The FSI should be reviewed on continuously to determine if the current FSI adequately addresses ongoing project work.** This includes whenever new tasks are considered or changed conditions are encountered. The Safety Coordinator should contact the RHSM for assistance in updating the FSI, or update the FSI and provide it to the RHSM. The follow conditions should be considered when determining if the FSI needs to be updated:
  - ☐ Access is needed to the restricted areas or activities listed in Section 2 of this FSI;
  - ☐ The scope changed, or additional tasks added to the project;
  - ☐ New LG Constructors staff joined the project;
  - ☐ New subcontractor added to the project;
  - ☐ New chemical or product used;
  - ☐ New contaminants or higher than anticipated levels of original contaminants been encountered.
  - ☐ Any other safety, equipment, activity or environmental hazards encountered that are not addressed in the FSI;
  - ☐ New LG Constructors or WBG policies, procedures or practices.

Project Name: Los Esteros Critical Energy Facility **Project Number:** 415059

EMPLOYEE NAME (Print)	EMPLOYEE SIGNATURE	COMPANY	DATE

LG Constructors FSI

Attachment 2

Project Activity Self-Assessment Checklists

HSSE Self-Assessment Checklist—AERIAL LIFTS

This checklist shall be used by LG Constructors personnel **only** and shall be completed at the frequency specified in the FSI.

This checklist is to be used at locations where: 1) LG Constructors employees are using aerial lifts and/or 2) LG Constructors provides oversight of subcontractor personnel who are using aerial lifts.

The SC may consult with subcontractors when completing this checklist, but shall not direct the means and methods of aerial lift use nor direct the details of corrective actions. Subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be submitted to HSSE staff for review.

Project Name: _____ Project No.: _____

Location: _____ PM: _____

Auditor: _____ Title: _____ Date: _____

This specific checklist has been completed to:

☐ Evaluate LG Constructors employee use of aerial lifts

☐ Evaluate a LG Constructors subcontractor's compliance with aerial lift requirements

Subcontractors Name: _____

Check "Yes" if an assessment item is complete/correct.

Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 2 must be completed for all items checked "No."

Check "N/A" if an item is not applicable.

Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in HSE-301

SECTION 1

	Yes	No	N/A	N/O
PERSONNEL SAFE WORK PRACTICES (3.1)				
1. Only authorized and trained personnel operating aerial lifts	☐	☐	☐	☐
2. Aerial lifts inspected by the operator prior to use	☐	☐	☐	☐
3. Lift controls tested by the operator each day prior to use	☐	☐	☐	☐
4. Personnel wearing full body harness w/ lanyard attached to boom/platform	☐	☐	☐	☐
5. Lanyards not attached to adjacent structures/equipment while in aerial lift	☐	☐	☐	☐
6. Personnel standing firmly on the floor of lift platform	☐	☐	☐	☐
7. Personnel remain in platform at all times and do not climb to structures	☐	☐	☐	☐
GENERAL (3.2.1)				
8. Standard guardrail or equivalent protection provided on lift platform	☐	☐	☐	☐
9. Aerial lifts provided with upper and lower controls.	☐	☐	☐	☐
10. Lower controls operated only with permission of personnel in lift, unless emergency	☐	☐	☐	☐
11. Lift controls properly marked and legible, and capacity rating posed on lift	☐	☐	☐	☐
12. Modifications to aerial lift certified in writing by manufacturer	☐	☐	☐	☐
AERIAL LIFT POSITIONING (3.2.2)				
13. Aerial lifts positioned on firm, level surface with brakes set	☐	☐	☐	☐
14. Wheel chocks used on inclines	☐	☐	☐	☐
15. Outriggers positioned on solid surfaces or cribbing when used	☐	☐	☐	☐
16. Safe clearance distance maintained while working near overhead powerlines	☐	☐	☐	☐
17. Safe clearance distance maintained while travelling under overhead powerlines	☐	☐	☐	☐
18. Aerial lifts not moved when boom elevated and personnel are working in platforms	☐	☐	☐	☐
19. Boom is properly cradled and outriggers stowed prior to moving aerial lift for travel	☐	☐	☐	☐
AERIAL LIFT OPERATION (3.2.3)				
20. Safe operating manual should be available for review and use by aerial lift operators	☐	☐	☐	☐
21. Aerial lift operators know boom and basket load limits and do not exceed them	☐	☐	☐	☐
22. Aerial lift platforms are free of slippery conditions	☐	☐	☐	☐
23. Personnel not standing or working below aerial lift operations	☐	☐	☐	☐
24. Warning signs or barricades provided under aerial lift operations	☐	☐	☐	☐
25. Counterweight swing radius barricaded or flagged	☐	☐	☐	☐
26. Aerial lifts not being used as cranes	☐	☐	☐	☐
27. Platforms free of attachments such as cables, wires, chains, or ropes	☐	☐	☐	☐
28. Aerial lifts not operated in winds exceeding 30 miles per hour	☐	☐	☐	☐
29. Platform foot switch physically operated and not mechanically blocked or by-passed	☐	☐	☐	☐
30. Insulating portion of aerial lift is not altered in any manner	☐	☐	☐	☐
31. Aerial lifts used indoors have exhaust vented to control carbon monoxide exposure	☐	☐	☐	☐

SECTION 2

Complete this section for all items checked "No" in Section 1. Deficient items must be corrected in a timely manner.

Item #	Corrective Action Planned/Taken	Date Corrected

Auditor: _____ Project Manager: _____

HSSE Self-Assessment Checklist—CONCRETE AND MASONRY

This checklist shall be used by LG Constructors personnel only and shall be completed at the frequency specified in the project FSI.

This checklist is to be used at locations where: 1) LG Constructors employees are exposed to concrete and masonry hazards (complete Personnel Safe Work Practices section only) and/or 2) LG Constructors provides oversight of subcontractor personnel who are exposed to concrete and masonry hazards.

The SC may consult with subcontractors when completing this checklist, but shall not direct the means and methods of concrete and masonry operations nor direct the details of corrective actions. Subcontractors shall determine how to correct deficiencies, and we must carefully rely on their expertise. Items considered imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to the HSSE staff for review.

Project Name: _____ Project No.: _____

Location: _____ PM: _____

Auditor: _____ Title: _____ Date: _____

This specific checklist has been completed to:

☐ Evaluate LG Constructors employee exposure to concrete and masonry hazards

☐ Evaluate a LG Constructors subcontractor's compliance with concrete and masonry requirements

Subcontractors Name: _____

Check "Yes" if an assessment item is complete/correct.

Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 2 must be completed for all items checked "No."

Check "N/A" if an item is not applicable.

Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in HSE-302

SECTION 1

	Yes	No	N/A	N/O
PERSONNEL SAFE WORK PRACTICES (5.1)				
1. Personnel in areas where concrete is being poured are wearing PPE as required	☐	☐	☐	☐
2. Protruding rebar is adequately guarded to control impalement hazards	☐	☐	☐	☐
3. Personnel do not ride concrete buckets or position themselves in lifting areas	☐	☐	☐	☐
4. Personnel maintain safe distance from formwork, shoring, precast, and lift-slab operations	☐	☐	☐	☐
5. Personnel do not enter limited access zones during masonry wall construction.	☐	☐	☐	☐
6. Personnel are not permitted under loads being lifted or walls being jacked	☐	☐	☐	☐
7. Personnel access is limited in areas where post-tension operations are performed	☐	☐	☐	☐
8. Scaffolding conforms to the requirements of SOP HSE-311 prior to use	☐	☐	☐	☐
9. Excavations conform to the requirements of SOP HSE-307 prior to entry	☐	☐	☐	☐
10. Lifting and rigging devices conform to the requirements of SOP HSE-303	☐	☐	☐	☐
GENERAL (5.2.2)				
11. All concrete structures where loads are to be placed have been inspected, as required	☐	☐	☐	☐
12. All protruding rebar, onto which employees could fall, are guarded	☐	☐	☐	☐
13. No employee is permitted to be behind the jack during tensioning operations except those employees essential to the post-tensioning operations	☐	☐	☐	☐
14. Signs and barriers are erected to limit employee access to the post-tensioning area during tensioning operations	☐	☐	☐	☐
TOOLS, MATERIALS, AND EQUIPMENT (5.2.3)				
15. Requirements for confined space entry and lockout/tagout are met, where required	☐	☐	☐	☐
16. Concrete mixers have clearing devices and guardrails installed, as required.	☐	☐	☐	☐
17. Portable concrete mixers have an interlock switch on the hopper gates (required).	☐	☐	☐	☐
18. Powered/rotating concrete troweling machines have appropriate shutoff devices installed.	☐	☐	☐	☐
19. Concrete buggy handles do not extend beyond the wheels on either side of the buggy	☐	☐	☐	☐
20. Concrete pumping systems using discharge pipes are provided with supports, as required	☐	☐	☐	☐
21. Concrete buckets w/hydraulic or pneumatic gates have positive safety devices, as required	☐	☐	☐	☐
22. Employees are not permitted to work under concrete buckets during lifting and lowering.	☐	☐	☐	☐
23. Elevated concrete buckets are routed so that no employees are exposed to overhead loads.	☐	☐	☐	☐
24. Employees are not permitted to ride concrete buckets	☐	☐	☐	☐
25. Sections of tremies and similar concrete conveyances are secured with wire rope	☐	☐	☐	☐
26. Bull float handles used where they might contact conductors are nonconductive or insulated	☐	☐	☐	☐
27. Masonry saws are guarded with a semicircular enclosure over the blade	☐	☐	☐	☐
28. Wet cutting methods or respiratory protection is used for masonry saw operation	☐	☐	☐	☐
29. Employees are not permitted to apply a cement, sand, and water mixture through a pneumatic hose unless the employee is wearing protective head and face equipment.	☐	☐	☐	☐

FORMWORK AND SHORING (5.2.4)				
30. Formwork is capable of supporting loads that may be reasonably anticipated to be applied	☐	☐	☐	☐
31. Drawings and plans required to be at the jobsite are available	☐	☐	☐	☐
32. All shoring equipment is inspected prior to erection	☐	☐	☐	☐
33. Damaged shoring equipment is not used	☐	☐	☐	☐
34. Erected shoring is inspected prior to, during, and immediately after concrete placement	☐	☐	☐	☐
35. The sills for shoring are sound, rigid, and capable of carrying the maximum intended load	☐	☐	☐	☐
36. All base plates, shore heads, extension devices, and adjustment screws are installed correctly	☐	☐	☐	☐
37. Eccentric loads on shore heads and similar are prohibited unless designed for such loading	☐	☐	☐	☐
38. Whenever single-post shores are tiered, shoring is designed and inspected, as required	☐	☐	☐	☐
39. Tiered single-post shores are vertically aligned and adequately braced, as required	☐	☐	☐	☐
40. Adjustment of single-post shores to raise formwork is not made after placement of concrete	☐	☐	☐	☐
41. Re-shoring is erected when concrete is required to support loads in excess of its capacity	☐	☐	☐	☐
42. Forms/shores are only removed when concrete has gained sufficient strength as needed	☐	☐	☐	☐
43. Re-shoring is not removed until the concrete being supported has attained adequate strength to support its weight and all loads placed upon it	☐	☐	☐	☐
44. Precast concrete wall units, structural framing and tilt-up wall panels are adequately supported to prevent overturning and to prevent collapse until permanent connections are completed	☐	☐	☐	☐
45. All masonry walls over 8 feet in height are adequately braced	☐	☐	☐	☐
46. Positioning devices/fall protection for workers on formwork 6’ or more above ground	☐	☐	☐	☐
LIFTING AND JACKING (5.2.5)				
47. Embedded lifting inserts attached to precast concrete members have required strength	☐	☐	☐	☐
48. Lifting hardware is capable of supporting at least five times the maximum intended load ☐	☐	☐	☐	
49. Employees are not permitted under precast concrete members being lifted or tilted	☐	☐	☐	☐
50. Lift-slab operations are designed and planned by a registered professional engineer	☐	☐	☐	☐
51. Jacks/lifting units are marked to indicate the manufacturer’s rated capacity	☐	☐	☐	☐
52. Jacks/lifting units are not loaded beyond the manufacturer’s rated capacity	☐	☐	☐	☐
53. Jacking equipment is capable of supporting at least two and one-half times the load	☐	☐	☐	☐
54. Jacks/lifting units are designed not to lift or continue to lift beyond their rated capacity	☐	☐	☐	☐
55. Jacks/lifting units have a safety device, which will provide load support upon malfunction	☐	☐	☐	☐
56. Jacking operations are synchronized to maintain slab within 1/2 inch of level position	☐	☐	☐	☐
57. If using automatic leveling, a device is installed that will stop the operation as required	☐	☐	☐	☐
58. A competent person is attending a centrally located manual leveling control.	☐	☐	☐	☐
59. The maximum number of manually controlled jacks/lifting units on one slab is limited as required.	☐	☐	☐	☐
60. No non-essential employees are permitted in buildings/structures while jacking is occurring.	☐	☐	☐	☐

61. No non-essential employees are permitted beneath a slab while it is being lifted.	☐	☐	☐	☐
62. When making temporary connections to support slabs, wedges are appropriately secured	☐	☐	☐	☐
63. All welding on temporary and permanent connections is performed by a certified welder	☐	☐	☐	☐
64. Load transfers from jacks/lifting units to building columns are not done until welds on the column shear plates (weld blocks) are cooled to air temperature.	☐	☐	☐	☐
65. Jacks/lifting units are positively secured to columns as to not become dislodged or dislocated	☐	☐	☐	☐
66. Equipment is designed/installed so that the lifting rods cannot slip out of position	☐	☐	☐	☐
67. Jacks/vertical supports are positioned so as loads do not exceed rated capacity of jacks	☐	☐	☐	☐
68. The jacks/ lifting devices are designed to support slip forms in the event of failure	☐	☐	☐	☐
69. The form structure is maintained within all design tolerances specified for plumbness during the jacking operation.	☐	☐	☐	☐
70. The predetermined safe rate of lift is not exceeded.	☐	☐	☐	☐
LIMITED ACCESS ZONES (5.2.6)				
71. A limited access zone is established whenever a masonry wall is being constructed.	☐	☐	☐	☐
72. The limited access zone is established prior to the start of construction of the wall.	☐	☐	☐	☐
73. The limited access zone is equal to the height of the wall to be reconstructed plus 4 feet and runs the entire length of the wall.	☐	☐	☐	☐
74. The limited access zone is established on the side of the wall, which will be unscaffolded	☐	☐	☐	☐
75. The limited access zone restricts entry to employees not engaged in constructing the wall	☐	☐	☐	☐
76. The limited access zone remains in place until the wall is adequately braced, as required.	☐	☐	☐	☐

SECTION 2

Complete this section for all items checked "No" in Section 1. Deficient items must be corrected in a timely manner.

Item #	Corrective Action Planned/Taken	Date Corrected

Auditor: _____ Project Manager: _____

HSSE Self-Assessment Checklist—CRANES, HOISTS AND RIGGING

This checklist shall be used by LG Constructors personnel only and shall be completed at the frequency specified in the project FSI.

This checklist is to be used at locations where: 1) LG Constructors employees are exposed to crane, hoist and rigging hazards (complete Personnel Safe Work Practices section only) and/or 2) LG Constructors provides oversight of subcontractor personnel who are exposed to crane, hoist and rigging hazards (complete entire checklist).

SC may consult with subcontractors when completing this checklist, but shall not direct the means and methods of crane, hoist and rigging operations nor direct the details of corrective actions. Subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to the HSSE Staff for review.

Project Name: _____ Project No.: _____

Location: _____ PM: _____

Auditor: _____ Title: _____ Date: _____

This specific checklist has been completed to:

☐ Evaluate LG Constructors employee exposure to crane, hoist and rigging hazards

☐ Evaluate a LG Constructors subcontractor's compliance with crane, hoist and rigging requirements

Subcontractors Name: _____

Check "Yes" if an assessment item is complete/correct.

Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 2 must be completed for all items checked "No."

Check "N/A" if an item is not applicable.

Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in HSE-303

SECTION 1

	Yes	No	N/A	N/O
PERSONNEL SAFE WORK PRACTICES (3.1)				
1. Individuals operating cranes and hoists of any type are certified operators	☐	☐	☐	☐
2. Cranes have current annual inspection and operations manual with load charts on site ☐	☐	☐	☐	
3. Swing radius of cranes are guarded and barricaded	☐	☐	☐	☐
4. Competent person inspects crane daily	☐	☐	☐	☐
5. Pre-lift meetings conducted with all parties involved in crane operations	☐	☐	☐	☐
6. Cranes used to lift vertically only	☐	☐	☐	☐
7. Adequate distance maintained between cranes parts and overhead power lines	☐	☐	☐	☐
8. Dedicated signal person assigned to signal operator	☐	☐	☐	☐
9. Cranes do not swing over live roadways, railways, processes, or occupied buildings	☐	☐	☐	☐
10. Critical lifts have written lifting/rigging plan	☐	☐	☐	☐
11. No personnel permitted on or under loads lifted by crane. Tag lines used to control load ☐	☐	☐	☐	
12. Manufacturers specifications and limitations for hoists followed	☐	☐	☐	☐
13. Personnel not permitted to ride on material hoists	☐	☐	☐	☐
14. Weather conditions considered when lifting operations performed	☐	☐	☐	☐
15. All rigging used as intended, inspected, stored, protected and supervised.	☐	☐	☐	☐
16. No fabrication, modifications, or additions to rigging made without testing and approval	☐	☐	☐	☐
CRANES GENERAL (3.2.1)				
17. The competent person inspects all cranes, hoists, and rigging prior to use	☐	☐	☐	☐
18. Frequent and periodic inspections have been completed for all cranes to be used	☐	☐	☐	☐
19. Crane ropes and hooks have been inspected by an authorized person	☐	☐	☐	☐
20. All guards and safety devices installed and equipment removed after maintenance	☐	☐	☐	☐
21. A load-rating chart is easily visible to the seated operator	☐	☐	☐	☐
22. A designated person has been assigned to signal the operator when visibility is obstructed	☐	☐	☐	☐
23. Hand signals to crane operators are those prescribed by ANSI	☐	☐	☐	☐
24. All outriggers are deployed and seated	☐	☐	☐	☐
25. The tires of truck mounted cranes are off the ground when the outriggers are seated	☐	☐	☐	☐
26. Cranes are equipped with load limiting devices and boom angle indicator	☐	☐	☐	☐
27. Cabs of cranes have adequate access and kept clean of loose tools, cans, and waste	☐	☐	☐	☐
28. Cranes are equipped with a 5 BC or higher fire extinguisher	☐	☐	☐	☐
29. All windows in cabs are safety glass that does not interfere with the safe operation	☐	☐	☐	☐
30. All machinery operating on rails, tracks, or trolleys has stops/limiting and overspeed devices	☐	☐	☐	☐
31. Moving parts on the crane that employees are exposed to are guarded	☐	☐	☐	☐
CRANES: POSITIONING (3.2.2)				
32. Cranes operated near live power lines will maintain minimum distance from the lines	☐	☐	☐	☐
33. Adequate clearance must be maintained between a crane and obstructions	☐	☐	☐	☐
34. The crane is level and blocked properly	☐	☐	☐	☐
35. Swing radius of crane has been barricaded to prevent exposure to struck against/ crush hazard	☐	☐	☐	☐

36. Exhaust pipes are guarded from employee contact	☐	☐	☐	☐
CRANES: OPERATION (3.2.3)				
37. Operator tests brakes when load is near rated capacity of lift	☐	☐	☐	☐
38. Sheaves are guarded or warning sign provided to identify hazard	☐	☐	☐	☐
39. Load or boom not lowered to where less than two full wraps of rope remain on drum	☐	☐	☐	☐
40. If two or more cranes are to be used to lift one load, a designated person is responsible for analyzing, instructing, rigging and signaling movement of the load	☐	☐	☐	☐
41. Cranes not operated without full amount of ballast or counterweight	☐	☐	☐	☐
42. Tag lines are used to control suspended load	☐	☐	☐	☐
43. Sudden acceleration or deceleration of load is avoided	☐	☐	☐	☐
44. Loads are not to be passed over personnel or facilities	☐	☐	☐	☐
45. No personnel are allowed to ride the load	☐	☐	☐	☐
46. Suspended loads are not left unattended	☐	☐	☐	☐
47. Lines are not allowed to twist around each other	☐	☐	☐	☐
HOISTS: GENERAL (3.2.4)				
48. Manufacturer's specifications and limitations are followed	☐	☐	☐	☐
49. Load capacities, operating speeds, and special warnings or instructions are posted on hoists	☐	☐	☐	☐
50. Hoist ropes are installed in accordance with the wire rope manufacturers' recommendations	☐	☐	☐	☐
51. Live booms are not installed on hoists	☐	☐	☐	☐
52. Operating rules are posted at the operator's station of hoists	☐	☐	☐	☐
53. No person will ride on material hoists except for inspection and maintenance	☐	☐	☐	☐
54. All entrances of the hoistways are protected by substantial gates or bars	☐	☐	☐	☐
55. Overhead protective coverings are provided on the top of every material host cage or platform	☐	☐	☐	☐
56. All hoistway entrance bars and gates are painted with diagonal contrasting colors	☐	☐	☐	☐

RIGGING: GENERAL (3.2.5)				
57. The rigging equipment is not used in excess of the rated capacity of the weakest component	☐	☐	☐	☐
58. The rigging competent person has inspected all rigging equipment prior to use on each shift and as necessary during its use	☐	☐	☐	☐
59. Documentation of proof testing is available for rigging equipment that has been repaired	☐	☐	☐	☐
60. Rigging equipment has not been shortened with knots, bolts or other makeshift devices	☐	☐	☐	☐
61. Rigging equipment, when not in use, is removed from the work area	☐	☐	☐	☐
62. Rigging equipment has been load tested annually by a competent person and documented	☐	☐	☐	☐
63. All hooks used according to manufacturer's recommendations or tested to twice SWL	☐	☐	☐	☐
64. Special rigging and hoisting devices are marked and proof tested prior to initial use	☐	☐	☐	☐
RIGGING: EQUIPMENT (3.2.6)				
65. Protruding end strands of wire rope have been covered or blunted	☐	☐	☐	☐
66. Wire rope not used if the rope shows any sign of excessive wear, corrosion, or defect	☐	☐	☐	☐
67. No wire rope slings are used if more than one wire in a lay is broken in the end fitting	☐	☐	☐	☐
68. Splices in rope slings are made in accordance with manufacturer's and regulatory specs	☐	☐	☐	☐
69. Synthetic web slings removed from service if showing any sign of damage	☐	☐	☐	☐
70. No job hooks, links, or makeshift fasteners, formed from bolts, rods, etc., are used (hooks must be safety latched or moused to prevent dislodgment of the load (WAC 296-155-330(6)(d))	☐	☐	☐	☐
71. Alloy steel chains have identification stating size, grade, rated capacity and reach	☐	☐	☐	☐
72. Manual coupling links or low carbon repair links not used to repair broken lengths of chain	☐	☐	☐	☐
73. Shackles and hooks are constructed of forged alloy steel with the identifiable load rating	☐	☐	☐	☐
RIGGING: USE (3.2.7)				
74. Rigging not pulled from under a resting load	☐	☐	☐	☐
75. Sling(s) is placed in center bowl of hook.	☐	☐	☐	☐
76. Sharp edges are "packed" to prevent cutting or damaging the rope or slings	☐	☐	☐	☐
77. Nylon, polyester, polypropylene web slings or web slings with aluminum fittings will not be used where fumes, vapors, sprays, mists or liquids of acids, caustics or phenolics are present	☐	☐	☐	☐
78. Natural or synthetic fiber rope slings used within acceptable operating temperature	☐	☐	☐	☐
79. U-bolts used to form wire rope eyes are of proper amount and spacing	☐	☐	☐	☐
80. U-bolts are installed so that the "U" section is in contact with the dead end of the rope	☐	☐	☐	☐

81. When more than one sling is used, or the sling angle is altered, the load has been calculated to assure that the safe working load is not exceeded	☐	☐	☐	☐

SECTION 2

Complete this section for all items checked "No" in Section 1. Deficient items must be corrected in a timely manner.

Item #	Corrective Action Planned/Taken	Date Corrected

Auditor: _____ Project Manager: _____

HSSE Self-Assessment Checklist—CSE

This checklist is provided as a method of verifying compliance with the OSHA confined-space entry standard. It shall be used at locations where LG Constructors employees enter confined spaces, or are required to perform oversight of subcontractor personnel entering confined spaces, or both.

LG Constructors staff shall not direct the means and methods of subcontractor confined space operations nor direct the details of corrective actions. The subcontractor must determine how to correct deficiencies and LG Constructors staff must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) must be corrected immediately or all exposed personnel must be removed from the hazard until corrected.

Completed checklists must be sent to HSSE staff for review.

Project Name: _____ Project No.: _____

Location: _____ PM: _____

Auditor: _____ Title: _____ Date: _____

This specific checklist has been completed to:

☐ Evaluate LG Constructors compliance with its confined-space entry program (SOP HS-203)

☐ Evaluate a LG Constructors subcontractor's compliance with its confined-space entry program

Subcontractors Name: _____

Check "Yes" if an assessment item is complete/correct.

Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 2 must be completed for all items checked "No."

Check "N/A" if an item is not applicable.

Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in HSE-203

SECTION 1

	Yes	No	N/A	N/O
CONFINED SPACE EVALUATION (6.1)				
1. Personnel informed of location and hazards of existing confined spaces (danger signs, verbal)	☐	☐	☐	☐
2. Determination made that work cannot be completed without entering the confined space	☐	☐	☐	☐
3. Information obtained regarding the space (blue prints, potential hazards, energy sources)	☐	☐	☐	☐
4. Spaces classified as permit-required, alternative procedure, or nonpermit confined spaces	☐	☐	☐	☐
TRAINING (6.2)				
5. Entrants, Attendants, and Entry Supervisor have completed confined-space entry training	☐	☐	☐	☐
6. Employees performing lockout/tagout procedures have completed LOTO training	☐	☐	☐	☐
7. Employees required to wear respirators have completed respiratory protection training	☐	☐	☐	☐
CONFINED-SPACE ENTRY (6.3)				
8. Completed permit or certificate posted at space entrance	☐	☐	☐	☐
9. Pre-entry briefing conducted	☐	☐	☐	☐
10. Entrants/Attendants verify that entry supervisor has authorized entry	☐	☐	☐	☐
11. Entrants/Attendants verify that all requirements of the permit or certificate have been satisfied	☐	☐	☐	☐
12. Atmospheric monitoring is conducted at frequency provided on the permit or certificate	☐	☐	☐	☐
13. Entry not permitted if an atmospheric hazard is detected above acceptable safe levels	☐	☐	☐	☐
14. Entrants evacuate space upon orders of the attendant or entry supervisor, when an alarm is sounded, or when a prohibited condition or dangerous situation is recognized	☐	☐	☐	☐
15. Entrants/Attendant informs entry supervisor of hazards confronted or created in the space or any problems encountered during entry	☐	☐	☐	☐
16. Entry supervisor informs the owner of such issues in item 15 above	☐	☐	☐	☐
ENTRY UNDER A CONFINED-SPACE ENTRY PERMIT (CSEP) (6.4)				
17. CSEP completed by entry supervisor				
18. All expected hazards listed	☐	☐	☐	☐
19. Entry supervisor and Attendant assigned	☐	☐	☐	☐
20. Communication methods established between entrants and the attendant (6.7.1)	☐	☐	☐	☐
21. Cleaning requirements identified (6.7.2)	☐	☐	☐	☐
22. Isolation requirements identified (6.7.3)	☐	☐	☐	☐
23. Ventilation requirements identified (6.7.4)	☐	☐	☐	☐
24. Protective equipment requirements identified (6.7.5)	☐	☐	☐	☐
25. Rescue equipment requirements identified (6.7.6)	☐	☐	☐	☐
26. Other requirements identified (6.7.7)	☐	☐	☐	☐
27. Rescue and emergency procedures identified (6.8)	☐	☐	☐	☐
28. Atmospheric monitoring requirements identified	☐	☐	☐	☐
29. HS&E manager approve use by signing (LG Constructors CSEP only)	☐	☐	☐	☐
30. Entry supervisor authorized entry by signing	☐	☐	☐	☐

31. Authorized entrants have completed CSE training and attended pre-entry briefing	☐	☐	☐	☐
32. Only authorized entrants permitted to enter the space	☐	☐	☐	☐
33. Entry supervisor sign the CSEP indicating its cancellation	☐	☐	☐	☐
34. Problems encountered during the entry listed	☐	☐	☐	☐
ENTRY UNDER AN ALTERNATIVE PROCEDURE CERTIFICATE (APC) (6.5)				
35. APC completed by entry supervisor	☐	☐	☐	☐
36. All expected atmospheric hazards listed	☐	☐	☐	☐
37. Entry supervisor and Attendant assigned	☐	☐	☐	☐
38. Entry supervisor verifies that nonatmospheric hazards do not exist	☐	☐	☐	☐
39. Communication methods established between entrants and the attendant	☐	☐	☐	☐
40. Covers removed safely	☐	☐	☐	☐
41. Openings guarded from both fall hazards and from objects entering the space	☐	☐	☐	☐
42. Continuous forced-air ventilation positioned to ventilate the immediate areas where employees are working and continue until they have left the space	☐	☐	☐	☐
43. Ventilation from a clean source of air	☐	☐	☐	☐
44. Atmospheric monitoring requirements identified	☐	☐	☐	☐
45. Entry supervisor authorize entry by signing	☐	☐	☐	☐
46. Authorized entrants have completed CSE training and attended pre-entry briefing	☐	☐	☐	☐
47. Only authorized entrants permitted to enter the space	☐	☐	☐	☐
48. Entry supervisor sign the APC indicating its cancellation	☐	☐	☐	☐
49. Problems encountered during the entry listed	☐	☐	☐	☐
ENTRY UNDER A NONPERMIT CERTIFICATE (NPC) (6.6)				
50. NPC completed by entry supervisor	☐	☐	☐	☐
51. Entry supervisor assigned	☐	☐	☐	☐
52. Attendant or buddy assigned	☐	☐	☐	☐
53. Buddy remains in the space with the entrant	☐	☐	☐	☐
54. Entry supervisor verifies nonatmospheric hazards do not exist	☐	☐	☐	☐
55. Communication methods established between entrants and attendant or buddy	☐	☐	☐	☐
56. Entrants informed to exit the space immediately if hazards are observed	☐	☐	☐	☐
57. Atmospheric monitoring requirements identified	☐	☐	☐	☐
58. Entry supervisor authorizes entry by signing	☐	☐	☐	☐
59. Authorized entrants have completed CSE training and attended pre-entry briefing	☐	☐	☐	☐
60. Only authorized entrants permitted to enter the space	☐	☐	☐	☐
61. Entry supervisor shall sign the NPC indicating its cancellation	☐	☐	☐	☐
62. Problems encountered during the entry shall be listed	☐	☐	☐	☐
RESCUE (6.8)				
63. Entrants wearing body harness with attached retrieval line (lifeline)	☐	☐	☐	☐
64. Other end of lifeline attached to retrieval device (when required) or fixed point outside space	☐	☐	☐	☐
65. Mechanical retrieval device positioned at access point for vertical-type spaces > 5 feet deep	☐	☐	☐	☐
66. Rescue team established	☐	☐	☐	☐
67. Team members have completed confined-space entry training	☐	☐	☐	☐
68. Team members informed of the hazards that they may confront during rescue operations	☐	☐	☐	☐

69. PPE & rescue equipment necessary to conduct safe entry-rescue provided & readily available	☐	☐	☐	☐
70. Team members trained on rescue duties and proper use of PPE and rescue equipment	☐	☐	☐	☐
71. All team members trained in first aid & CPR, at least one member holding a current certification	☐	☐	☐	☐
72. Team has made simulated rescue from a space of similar configuration within last 12 months	☐	☐	☐	☐
73. Communication established & tested between the team & entrants, and emergency provider	☐	☐	☐	☐
74. Local emergency medical provider notified in advance of entries into PRCS	☐	☐	☐	☐
ATMOSPHERIC MONITORING (6.9)				
75. Qualified individual conducts atmospheric monitoring	☐	☐	☐	☐
76. Monitoring results documented on permit or certificate	☐	☐	☐	☐
77. Entrants do not enter until all monitoring requirements are completed	☐	☐	☐	☐
78. Monitoring equipment calibrated prior to use	☐	☐	☐	☐
79. Monitoring conducted for oxygen, flammability, and toxic air contaminants	☐	☐	☐	☐
80. Monitoring conducted bottom to top at five foot intervals	☐	☐	☐	☐
PRE-ENTRY BRIEFING (6.10)				
81. Entry supervisor conducts the briefing and discusses the follow items:	☐	☐	☐	☐
82. Explanation of the work to be performed and limitations	☐	☐	☐	☐
83. Explanation of actual and potential hazards, including the possible behavioral effects and signs, symptoms, and consequences of exposure	☐	☐	☐	☐
84. Review of the control measure and atmospheric monitoring requirements, as specified on permit or certificate	☐	☐	☐	☐
85. Review of entrant and attendant responsibilities	☐	☐	☐	☐

SECTION 2

Complete this section for all items checked "No" in Section 1. Deficient items must be corrected in a timely manner.

Item #	Corrective Action Planned/Taken	Date Corrected

Auditor: _____ Project Manager: _____

HSSE Self-Assessment Checklist—EARTHMOVING EQUIPMENT

This checklist shall be used by LG Constructors personnel only and shall be completed at the frequency specified in the project FSI.

This checklist is to be used at locations where: 1) LG Constructors employees are potentially exposed to hazards associated with earthmoving equipment operations (complete Personnel Safe Work Practices section only), and/or 2) LG Constructors oversight of a earthmoving equipment subcontractor is required (complete entire checklist).

The SC may consult with earthmoving equipment subcontractors when completing this checklist, but shall not direct the means and methods of equipment operations nor direct the details of corrective actions. Earthmoving equipment subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to HSSE staff for review.

Project Name: _____ Project No.: _____

Location: _____ PM: _____

Auditor: _____ Title: _____ Date: _____

This specific checklist has been completed to:

☐ Evaluate LG Constructors employee exposures to earthmoving equipment hazards

☐ Evaluate a LG Constructors subcontractor's compliance with earthmoving equipment H&S requirements

Subcontractors Name: _____

Check "Yes" if an assessment item is complete/correct.

Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 2 must be completed for all items checked "No."

Check "N/A" if an item is not applicable.

Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HSE-306

SECTION 1

	Yes	No	N/A	N/O
PERSONNEL SAFE WORK PRACTICES (5.1)				
1. Personnel maintaining safe distance from operating equipment	☐	☐	☐	☐
2. Positioning personnel in close proximity to operating equipment is avoided	☐	☐	☐	☐
3. Personnel wearing high-visibility or reflective vests when close to equipment	☐	☐	☐	☐
4. Personnel approach operating equipment safely	☐	☐	☐	☐
5. Personnel riding only in seats of equipment cab and using seat belts	☐	☐	☐	☐
6. Personnel not positioned under elevated portions of equipment	☐	☐	☐	☐
7. Personnel not positioned under hoisted loads	☐	☐	☐	☐
8. Personnel not hoisted by equipment	☐	☐	☐	☐
9. Personnel do not to approach equipment that has become electrically energized	☐	☐	☐	☐
10. Personnel wearing appropriate PPE, per HSP/FSI	☐	☐	☐	☐
EQUIPMENT SAFETY REQUIREMENTS				
PRIOR TO OPERATING EQUIPMENT (5.2.1)				
11. Only qualified and authorized personnel operating equipment	☐	☐	☐	☐
12. Daily safety briefing/meeting conducted with equipment operators	☐	☐	☐	☐
13. Daily inspection of equipment conducted and documented	☐	☐	☐	☐
14. Modifications and attachments used approved by equipment manufacturer	☐	☐	☐	☐
15. Backup alarm or spotter used when backing equipment	☐	☐	☐	☐
16. Operational horn provided on bi-directional equipment	☐	☐	☐	☐
17. Seat belts are provided and used	☐	☐	☐	☐
18. Rollover protective structures (ROPS) provided	☐	☐	☐	☐
19. Braking system capable of stopping full payload	☐	☐	☐	☐
20. Headlights and taillights operable when additional light required	☐	☐	☐	☐
21. Brake lights in operable condition	☐	☐	☐	☐
22. Cab glass provides no visible distortion to the operator	☐	☐	☐	☐
23. All machine guards are in place	☐	☐	☐	☐
24. Hauling equipment (dump trucks) provided with cab shield or canopy	☐	☐	☐	☐
25. Dump truck beds provided with positive support during maintenance or inspection	☐	☐	☐	☐
26. Dump truck operating levers provided with latch to prevent accidental dumping	☐	☐	☐	☐
27. Air monitoring conducted per HSP/FSI for hazardous atmospheres	☐	☐	☐	☐
EQUIPMENT PLACEMENT (5.2.2)				
28. Equipment position on firm/level surface, outriggers used	☐	☐	☐	☐
29. Location of underground utilities identified	☐	☐	☐	☐
30. Safe clearance distance maintained while working under overhead power lines	☐	☐	☐	☐
31. Safe distance is maintained while traveling under power lines	☐	☐	☐	☐
32. Warning system used to remind operator of excavation edge	☐	☐	☐	☐
33. Unattended equipment visibly marked at night	☐	☐	☐	☐
34. Tools lowered/parking brake set when not in use, wheels chocked on incline	☐	☐	☐	☐
EQUIPMENT OPERATION (5.2.3)				
35. Equipment operated on safe roadways and grades	☐	☐	☐	☐
36. Equipment operated at safe speed	☐	☐	☐	☐
37. Operators maintain unobstructed view of travel path	☐	☐	☐	☐
38. Equipment not operated during inclement weather, lightning storms	☐	☐	☐	☐

39. Equipment started and moved safely	☐	☐	☐	☐
40. Operators keep body parts inside cab during operation	☐	☐	☐	☐
41. Vehicle occupants in safe position while loading/unloading	☐	☐	☐	☐
42. Signal person visible to operator when required	☐	☐	☐	☐
43. Hoisting equipment operated according to equipment manufacturer specifications	☐	☐	☐	☐
44. Lifting and hauling capacities are not exceeded	☐	☐	☐	☐
EQUIPMENT MAINTENANCE (5.2.4)				
45. Defective components repaired immediately	☐	☐	☐	☐
46. Suspended equipment or attachments supported prior to work under or between	☐	☐	☐	☐
47. Lockout/tagout procedures used prior to maintenance	☐	☐	☐	☐
48. Tires on split rims removed using safety tire rack or cage	☐	☐	☐	☐
49. Good housekeeping maintained on and around equipment	☐	☐	☐	☐

SECTION 2

Complete this section for all items checked "No" in Section 1. Deficient items must be corrected in a timely manner.

Item #	Corrective Action Planned/Taken	Date Corrected

Auditor: _____ Project Manager: _____

HSSE Self-Assessment Checklist—ELECTRICAL

This checklist shall be used by LG Constructors personnel only and shall be completed at the frequency specified in the project's written safety plan.

This checklist is to be used at locations when: (1) LG Constructors employees are required to use electrical appliances, are exposed to electrical hazards, or are working on or near exposed energized electrical equipment; and/or (2) LG Constructors provides oversight of an electrical subcontractor.

The Safety Coordinator (SC) may consult with electrical subcontractors when completing this checklist, but shall not direct the means and methods of electrical operations nor direct the details of corrective actions. Subcontractors shall determine how to correct deficiencies, and LG Constructors must carefully rely on their expertise. Items or conditions considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately, or all exposed personnel shall be removed from the hazard until corrected.

Project Name: _____ Project No.: _____

Location: _____ PM: _____

Auditor: _____ Title: _____ Date: _____

This specific checklist has been completed to:

☐ Evaluate LG Constructors employee exposure to electrical hazards (Complete Section 1)

☐ Evaluate a LG Constructors subcontractor's compliance with electrical safety requirements (Complete entire checklist)

Subcontractors Name: _____

Check "Yes" if an assessment item is complete/correct.

Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 2 must be completed for all items checked "No."

Check "N/A" if an item is not applicable.

Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in SOP HSE-206.

SECTION 1

	Yes	No	N/A	N/O
PERSONNEL SAFE WORK PRACTICES (3.1)				
1. Personnel have completed electrical safety training	☐	☐	☐	☐
2. Attempts are made to locate all energized electrical circuits before work begins	☐	☐	☐	☐
3. Installation/repair areas sufficiently guarded with barriers and signs to prevent unauthorized entry	☐	☐	☐	☐
4. Only qualified employees installing or working with electrical equipment	☐	☐	☐	☐
5. Electrical circuits that may be contacted are de-energizing and grounded or guarded	☐	☐	☐	☐
6. Lockout/Tagout procedures when required verified using the checklist provided in HSE-307	☐	☐	☐	☐
7. Only qualified electrical workers defeating electrical safety interlocks.	☐	☐	☐	☐
8. Where the location of underground power lines is unknown, insulated gloves are used	☐	☐	☐	☐
Electrical Power Tools and Extension Cords (5.3)				
9. Electric power tools and extension cords inspected prior to use. Damaged equipment not used	☐	☐	☐	☐
10. Extension cords supplying power tools provided with Ground Fault Circuit Interrupters (GFCI)	☐	☐	☐	☐
11. Electric power tools operated and maintained according to manufacturer's instructions	☐	☐	☐	☐
12. Electric power tools effectively grounded or double-insulated	☐	☐	☐	☐
13. Extension cords grounded and designed for heavy duty or industrial grade	☐	☐	☐	☐
14. Extension cords not substituted for fixed wiring	☐	☐	☐	☐
15. Extension cords covered, elevated, or protected when passing through work areas	☐	☐	☐	☐
16. Extension cords passing through doorways or other pinch points protected from damage	☐	☐	☐	☐
17. Extension cords not concealed or run through walls, ceilings, or floors.	☐	☐	☐	☐
18. Extension cords not fastened with staples, hung from nails, or suspended with wire.	☐	☐	☐	☐
19. Working space, walkways, and similar areas are kept clear of cords to prevent tripping hazards	☐	☐	☐	☐
Portable Lighting (5.4)				
20. Portable lamps wired with flexible cord with grounded plugs	☐	☐	☐	☐
21. Portable lights not suspended by their electric cords unless designed for suspension	☐	☐	☐	☐
22. Portable lights protected from contact or breakage	☐	☐	☐	☐
23. Portable lights used in wet locations operated at 12 volts or less or used with GFCI	☐	☐	☐	☐
Overhead Power Lines (5.5)				
24. Lines de-energized and grounded, insulated, or safe clearance distance maintained	☐	☐	☐	☐
25. Personnel stay clear of grounding point of equipment intentionally grounded	☐	☐	☐	☐
26. Personnel do not touch or approach equipment that has become energized	☐	☐	☐	☐
General Installation Requirements (5.7)				
35. Competent person overseeing electrical activities, including inspections	☐	☐	☐	☐
36. Subcontractor personnel using appropriate safety and protective equipment	☐	☐	☐	☐
37. Electrical equipment free from recognized hazards	☐	☐	☐	☐
38. Equipment approved for intended use and installed according to approvals	☐	☐	☐	☐
39. Manufacturer's name, trademark, or other descriptive marking placed on equipment	☐	☐	☐	☐
40. Energized parts > 50 volts guarded against accidental contact	☐	☐	☐	☐

41. Electrical equipment > 600 volts placed in a vault, room, closet, or protected area	☐	☐	☐	☐
42. Sufficient access and working clearances provided and maintained for all electric equipment.	☐	☐	☐	☐
43. Means provided to disconnect conductors from the service-entrance conductors	☐	☐	☐	☐
44. Circuit breakers sufficient for system current load	☐	☐	☐	☐
45. Over-current protection devices readily accessible and legibly marked to indicate purpose	☐	☐	☐	☐
46. Equipment firmly secured to surface on which it is mounted	☐	☐	☐	☐
47. Electrical equipment ventilated for cooling as required	☐	☐	☐	☐
48. Electrical equipment protected from damage by environmental conditions	☐	☐	☐	☐
49. Equipment in hazardous locations maintained in a dust-tight, ignition-proof condition	☐	☐	☐	☐
50. Equipment producing arcs, sparks, flames, enclosed or separated from combustible material	☐	☐	☐	☐
51. Conductors spliced or joined properly and free ends covered with insulation	☐	☐	☐	☐
52. Equipment grounding provided on all equipment requiring such grounding	☐	☐	☐	☐
Ground-fault Protection (5.6)				
53. GFCIs used or an assured equipment-grounding conductor (AEGC) program implemented	☐	☐	☐	☐
54. When GFCIs used, installed on all 120-volt, 15- and 20-ampere temporary receptacle outlets	☐	☐	☐	☐
55. When AEGC program used, covers all extension cords and temporary receptacles	☐	☐	☐	☐
56. AEGC program also covers all equipment connected by cord and plug	☐	☐	☐	☐
57. Under AEGC program, equipment visually inspected for external defects before each day's use	☐	☐	☐	☐
58. Under AEGC program, continuity and grounding testing performed at least every 3 months	☐	☐	☐	☐
59. Records maintained for all AEGC program testing	☐	☐	☐	☐

SECTION 2

Complete this section for all items checked "No" in Section 1. Deficient items must be corrected in a timely manner.

Item #	Corrective Action Planned/Taken	Date Corrected

Auditor: _____ Project Manager: _____

HSSE Self-Assessment Checklist—EXCAVATIONS

This checklist shall be used by LG Constructors personnel only and shall be completed at the frequency specified in the project's Health and Safety Plan/Field Safety Instruction (HSP/FSI).

This checklist is to be used at locations where: 1) LG Constructors employees enter excavations (complete Excavation Entry Requirements section only), and/or 2) LG Constructors oversight of an excavation subcontractor is required (complete entire checklist).

The SSC may consult with excavation subcontractors when completing this checklist, but shall not direct the means and methods of excavation operations nor direct the details of corrective actions. Excavation subcontractors shall determine how to correct deficiencies and we must rely on their expertise. Conditions considered imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazardous area until the situation is corrected.

Project Name: _____ Project No.: _____

Location: _____ PM: _____

Auditor: _____ Title: _____ Date: _____

This specific checklist has been completed to:

☐ Evaluate LG Constructors employee exposures to excavation hazards

☐ Evaluate a LG Constructors subcontractor's compliance with excavation HS&E requirements

Subcontractors Name: _____

Check "Yes" if an assessment item is complete/correct.

Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 2 must be completed for all items checked "No."

Check "N/A" if an item is not applicable.

Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in HSE-301

SECTION 1

	Yes	No	N/A	N/O
EXCAVATION ENTRY REQUIREMENTS (4.1)				
1. Personnel have completed excavation safety training	☐	☐	☐	☐
2. Competent person has completed daily inspection and has authorized entry	☐	☐	☐	☐
3. Personnel are aware of entry requirements established by competent person	☐	☐	☐	☐
4. Protective systems are free from damage and in stable condition	☐	☐	☐	☐
5. Surface objects/structures secured from falling into excavation	☐	☐	☐	☐
6. Potential hazardous atmospheres have been tested and found to be at safe levels	☐	☐	☐	☐
7. Precautions have been taken to prevent cave-in from water accumulation in the excavation	☐	☐	☐	☐
8. Personnel wearing appropriate, PPE per HSP/SI	☐	☐	☐	☐
GENERAL (4.2.1)				
9. Daily safety briefing/meeting conducted with personnel	☐	☐	☐	☐
10. Excavation and protective systems adequately inspected by competent person	☐	☐	☐	☐
11. Defective protective systems or other unsafe conditions corrected before entry	☐	☐	☐	☐
12. Guardrails provided on walkways over excavation 6 ft (1.8m) or deeper	☐	☐	☐	☐
13. Barriers provided at excavations 6 ft or deeper when excavation not readily visible	☐	☐	☐	☐
14. Barriers or covers provided for wells, pits, shafts, or similar excavation 6 ft (1.8 m) or deeper	☐	☐	☐	☐
15. Earthmoving equipment operated safely (use earthmoving equipment checklist in HSE-306)	☐	☐	☐	☐
PRIOR TO EXCAVATING (4.2.2)				
16. Dig Permit obtained where required by client/facility	☐	☐	☐	☐
17. Location of underground utilities and installations identified	☐	☐	☐	☐
EXCAVATING ACTIVITIES (4.2.3)				
26. Rocks, trees, and other unstable surface objects removed or supported	☐	☐	☐	☐
27. Exposed underground utility lines supported	☐	☐	☐	☐
28. Undermined surface structures supported or determined to be in safe condition	☐	☐	☐	☐
29. Warning system used to remind equipment operators of excavation edge	☐	☐	☐	☐
EXCAVATION ENTRY (4.2.4)				
32. Trenches > 4 ft (1.2 m) deep provided with safe means of egress within 25 ft (7.6 m)	☐	☐	☐	☐
33. Structure ramps designed and approved by competent person	☐	☐	☐	☐
34. Potential hazardous atmospheres tested prior to entry	☐	☐	☐	☐
35. Rescue equipment provided where potential for hazardous atmosphere exists	☐	☐	☐	☐
36. Ventilation used to control hazardous atmosphere and air tested frequently	☐	☐	☐	☐
37. Appropriate respiratory protection used when ventilation does not control hazards	☐	☐	☐	☐
38. Precautions taken to prevent cave-in resulting from water accumulation in excavation	☐	☐	☐	☐
39. Precautions taken to prevent surface water from entering excavation	☐	☐	☐	☐
40. Protection provided from falling/rolling material originating from excavation face	☐	☐	☐	☐
41. Spoil piles, equipment, materials restrained or kept at least 2 ft (61 cm) from excavation edge	☐	☐	☐	☐
EXCAVATION PROTECTIVE SYSTEMS (4.2.5)				
42. Protective systems used for excavations 5 ft (1.5 m) or deeper, unless in stable rock	☐	☐	☐	☐
43. Protective systems for excavation deeper than 20 ft (6.1 m) designed by registered PE	☐	☐	☐	☐

44. If soil unclassified, maximum allowable slope is 34 degrees	☐	☐	☐	☐
45. Protective systems free from damage	☐	☐	☐	☐
46. Protective system used according to manufacturer's recommendations and not subjected to loads exceeding design limits	☐	☐	☐	☐
47. Protective system components securely connected to prevent movement or failure	☐	☐	☐	☐
48. Cave-in protection provided while entering/exiting shielding systems	☐	☐	☐	☐
49. Personnel removed from shielding systems when installed, removed, or if vertical movement	☐	☐	☐	☐
PROTECTIVE SYSTEM REMOVAL AND BACKFILLING (4.2.6)				
50. Protective system removal starts and progresses from excavation bottom	☐	☐	☐	☐
51. Protective systems removed slowly and cautiously	☐	☐	☐	☐
52. Temporary structure supports used if failure of remaining components observed	☐	☐	☐	☐
53. Backfilling takes place immediately after protective system removal	☐	☐	☐	☐

SECTION 2

Complete this section for all items checked "No" in Section 1. Deficient items must be corrected in a timely manner.

Item #	Corrective Action Planned/Taken	Date Corrected

Auditor: _____ Project Manager: _____

HSSE Self-Assessment Checklist—FALL PROTECTION

This checklist shall be used by LG Constructors personnel only and shall be completed at the frequency specified in the project's HSP/FSI.

This checklist is to be used at locations where: (1) LG Constructors employees are required to use fall protection (complete Fall Protection Use section), (2) LG Constructors employees are designing or installing fall protection systems (complete Construction and Install section); and/or (3) LG Constructors provides oversight of a subcontractor whose personnel design or install fall protection systems or are required to use fall protection (complete entire checklist).

SC may consult with subcontractors when completing this checklist, but shall not direct the means and methods of fall protection operations, nor direct the details of corrective actions. Subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Project Name: _____ Project No.: _____

Location: _____ PM: _____

Auditor: _____ Title: _____ Date: _____

This specific checklist has been completed to:

☐ Evaluate LG Constructors employee exposure to fall hazards

☐ Evaluate a LG Constructors subcontractor's compliance with fall protection requirements

Subcontractors Name: _____

Check "Yes" if an assessment item is complete/correct.

Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 2 must be completed for all items checked "No."

Check "N/A" if an item is not applicable.

Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HSE-308.

SECTION 1

	Yes	No	N/A	N/O
FALL PROTECTION USE (3.2)				
1. LG Constructors employees have completed initial fall protection training	☐	☐	☐	☐
2. Project Fall Protection Evaluation Form is completed	☐	☐	☐	☐
3. LG Constructors employees have complete project-specific fall protection training	☐	☐	☐	☐
4. Personnel aware of and follow requirements established by competent person	☐	☐	☐	☐
5. Personnel only using systems for which they have received training	☐	☐	☐	☐
6. Fall protection equipment used only for fall protection and not to hoist materials	☐	☐	☐	☐
7. Horizontal lifelines used under supervision of qualified person	☐	☐	☐	☐
8. When vertical lifelines are used, each employee attached to a separate lifeline	☐	☐	☐	☐
9. Personnel remaining within guardrails, when provided	☐	☐	☐	☐
10. Personnel do not stand on objects or ladders on top platforms protected by guardrails	☐	☐	☐	☐
11. Personal fall arrest systems (PFAS) inspected prior to each use for defects	☐	☐	☐	☐
12. PFAS rigged such that personnel can neither free-fall more than 6', nor contact any lower level	☐	☐	☐	☐
13. PFAS anchorages capable of supporting 5,000 pounds	☐	☐	☐	☐
14. PFAS not be attached to guardrail systems or hoists	☐	☐	☐	☐
15. PFAS components subjected to impact loading immediately removed from service	☐	☐	☐	☐
CONSTRUCTION & INSTALL				
GUARDRAILS (3.3.1)				
16. Top rails positioned 39"-45" above the walking/working level	☐	☐	☐	☐
17. Midrails, screen, or other barrier between the top rail and the walking/working surface	☐	☐	☐	☐
18. Wood construction: 2"x4" top rails, 1"x6" midrails, and 2"x4" posts spaced every 8'	☐	☐	☐	☐
19. Pipe construction: 1-½" nominal diameter with posts spaced every 8'	☐	☐	☐	☐
20. Structural steel construction: 2"x2"x3/8" angles with posts spaced every 8'	☐	☐	☐	☐
21. Other construction: pass a 200 lb. load test, no deflection < 39"	☐	☐	☐	☐
22. Natural or synthetic rope top rails/midrails inspected frequently & pass 200 lb. load test ☐	☐	☐	☐	
23. Wire rope top rails/midrails > ¼" nominal diameter and flagged every 6'	☐	☐	☐	☐
24. Points of access (ladderways) provided with gate or offset	☐	☐	☐	☐
SAFETY NETS (3.3.2)				
25. Nets installed as close as practicable under the walking/working surface, < 30'	☐	☐	☐	☐
26. Potential fall area from bridge surfaces to net unobstructed	☐	☐	☐	☐
27. Nets extend outward from the work surface based on the vertical fall distance	☐	☐	☐	☐
28. Nets pass drop test or competent person certifies nets are in compliance	☐	☐	☐	☐
29. Nets installed with sufficient clearance underneath to prevent contact with the surface	☐	☐	☐	☐
30. Nets inspected at least once a week and after any occurrence that could affect its integrity	☐	☐	☐	☐
31. Objects in net removed as soon as possible, at least before the next work shift	☐	☐	☐	☐
32. Mesh openings < 6" in length on any side	☐	☐	☐	☐
33. Border ropes have a minimum breaking strength of 5,000 pounds	☐	☐	☐	☐
34. Safety net panel connections as strong as integral net components and spaced < 6" apart	☐	☐	☐	☐

PERSONAL FALL ARREST SYSTEMS (3.3.3)				
35. PFAS components meet or exceed OSHA strength criteria	☐	☐	☐	☐
36. PFAS rigged such that personnel can neither free-fall more than 6', nor contact any lower level	☐	☐	☐	☐
37. Body harness back dee-ring used as attachment point	☐	☐	☐	☐
38. Only locking type snaphooks are used	☐	☐	☐	☐
39. Horizontal lifelines used under supervision of qualified person with safety factor of > 2	☐	☐	☐	☐
40. When vertical lifelines are used, each employee attached to a separate lifeline	☐	☐	☐	☐
41. PFAS anchorages independent of anchorages used to support or suspend platforms	☐	☐	☐	☐
42. Anchorages capable of supporting > 5,000 lbs. per person or used under supervision of qualified person with safety factor of > 2	☐	☐	☐	☐
43. Method of rescue provided in the event of a fall	☐	☐	☐	☐
POSITIONING DEVICES (3.3.4)				
44. Components meet or exceed OSHA PFAS construction and strength criteria	☐	☐	☐	☐
45. Components inspected prior to each use and defective components removed from service	☐	☐	☐	☐
46. Positioning devices rigged such that personnel cannot free-fall more than 2'	☐	☐	☐	☐
47. Anchorages capable of supporting > 2 times potential impact load of fall or 3,000pounds	☐	☐	☐	☐
WARNING LINES (3.4.5)				
48. Warning lines 34"-39" from the walking/working surface	☐	☐	☐	☐
49. Warning lines flagged at < 6' intervals with high-visibility material	☐	☐	☐	☐
50. Warning lines attached at stanchions capable of resisting 16 lb. force without tipping	☐	☐	☐	☐
51. Warning lines erected > 6' from each roof edge	☐	☐	☐	☐
52. Warning lines erected > 10' from roof edge perpendicular to mechanical equipment travel	☐	☐	☐	☐
53. Warning line placed across the access points when not in use	☐	☐	☐	☐
54. Only personnel performing roof work between a roof edge and a warning line	☐	☐	☐	☐
CONTROLLED ACCESS ZONE (3.3.6)				
55. Control lines enclose controlled access zones	☐	☐	☐	☐
56. Only personnel engaged in related work permitted in the controlled access zone	☐	☐	☐	☐
57. Control lines 30"-45" from the walking/working surface	☐	☐	☐	☐
58. Control lines flagged at < 6' intervals with high-visibility material	☐	☐	☐	☐
59. Overhand bricklaying control lines positioned 10'-15' from working edge	☐	☐	☐	☐
60. Leading edge control lines positioned 6'-25' from leading edge	☐	☐	☐	☐
61. Precast concrete control lines positioned 6'-60' or half the length of the erected member	☐	☐	☐	☐
SAFETY MONITORING SYSTEM (3.3.7)				
62. Safety monitor designated to observe and warn personnel	☐	☐	☐	☐
63. Safety monitor not distracted from the monitoring function	☐	☐	☐	☐
64. Safety monitor on the same working surface within sight and voice communication	☐	☐	☐	☐
65. Only personnel necessary for work in safety monitoring zone	☐	☐	☐	☐
66. Personnel adhere to the safety monitor's instructions	☐	☐	☐	☐
FALL PROTECTION PLAN (3.3.8)				
67. Plan prepared by qualified person and specifically for site work being performed	☐	☐	☐	☐
68. Plan maintained current with changes approved by a qualified person	☐	☐	☐	☐

69. Plan maintained at the job site and implemented by competent person	☐	☐	☐	☐
70. Plan documents why fall protection systems are infeasible or would create a greater hazard	☐	☐	☐	☐
71. Plan discusses measures taken to reduce or eliminate the fall hazards	☐	☐	☐	☐
72. Plan discusses when scaffolds, ladders, or vehicle mounted work platforms shall be used	☐	☐	☐	☐
73. Locations covered by plan identified and classified as controlled access zones	☐	☐	☐	☐
74. Entry into controlled access zone limited to personnel designated in plan	☐	☐	☐	☐
75. Safety monitoring system used when no other alternative measure implemented	☐	☐	☐	☐
COVERS (3.3.9)				
76. Covers capable of supporting 2x the maximum weight imposed on the cover at any one time	☐	☐	☐	☐
77. Covers secured to prevent accidental displacement	☐	☐	☐	☐
78. Covers color coded or marked HOLE or COVER	☐	☐	☐	☐
FALLING OBJECT PROTECTION (3.3.10)				
79. Personnel exposed to falling objects wearing hard hats	☐	☐	☐	☐
80. Objects on elevated surfaces positioned away from surface edge	☐	☐	☐	☐
81. Toeboards, screens, guardrails, or canopies used or area barricaded below	☐	☐	☐	☐
82. Toeboards, when used, erected along the edge of the overhead walking/working surface	☐	☐	☐	☐
83. Toeboards 3-½” high, < ¼” clearance above the surface, and no openings > 1”	☐	☐	☐	☐
84. Screening/paneling provided where equipment or materials are piled above toeboards	☐	☐	☐	☐
85. Guardrails, when used, no openings small enough to prevent passage of falling objects	☐	☐	☐	☐
86. Overhand bricklaying masonry/mortar not stored within 4’ of working edge	☐	☐	☐	☐
87. Excess overhand bricklaying mortar, masonry units, and other debris kept clear	☐	☐	☐	☐
88. Roofing materials not stored within 6’ of a roof edge, unless guardrails are provided	☐	☐	☐	☐
89. Roofing materials that are near roof edge are stable and self-supporting	☐	☐	☐	☐
90. Canopies, when used, strong enough to prevent collapse and penetration by falling objects	☐	☐	☐	☐

SECTION 2

Complete this section for all items checked "No" in Section 1. Deficient items must be corrected in a timely manner.

Item #	Corrective Action Planned/Taken	Date Corrected

Auditor: _____ Project Manager: _____

HSSE Self-Assessment Checklist—HAND AND POWER TOOLS

This checklist shall be used by LG Constructors personnel only and shall be completed at the frequency specified in the project's HSP/FSI.

This checklist is to be used at locations where: (1) LG Constructors employees are exposed to hand and power tool hazards and/or (2) LG Constructors provides oversight of subcontractor personnel who are exposed to hand and power tool hazards.

The SC may consult with subcontractors when completing this checklist, but shall not direct the means and methods of hand and power tool use nor direct the details of corrective actions. Subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to the HSSE staff for review.

Project Name: _____ Project No.: _____

Location: _____ PM: _____

Auditor: _____ Title: _____ Date: _____

This specific checklist has been completed to:

☐ Evaluate LG Constructors employee use exposure to hand and power tool hazards

☐ Evaluate a LG Constructors subcontractor's compliance with hand and power tool requirements

Subcontractors Name: _____

Check "Yes" if an assessment item is complete/correct.

Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 2 must be completed for all items checked "No."

Check "N/A" if an item is not applicable.

Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HSE-210.

SECTION 1

	Yes	No	N/A	N/O
PERSONNEL SAFE WORK PRACTICES (3.1)				
1. All tools operated according to manufacturer's instructions and design limitations	☐	☐	☐	☐
2. All hand and power tools maintained in a safe condition and inspected and tested before use	☐	☐	☐	☐
3. Defective tools are tagged and removed from service until repaired	☐	☐	☐	☐
4. PPE is selected and used according to tool-specific hazards anticipated	☐	☐	☐	☐
5. Power tools are not carried or lowered by their cord or hose	☐	☐	☐	☐
6. Tools are disconnected from energy sources when not in use, servicing, cleaning, etc.	☐	☐	☐	☐
7. Safety guards remain installed or are promptly replaced after repair.	☐	☐	☐	☐
8. Tools are stored properly	☐	☐	☐	☐
9. Cordless tools and recharging units both conform to electrical standards and specifications	☐	☐	☐	☐
10. Tools used in explosive environments are rated for such use	☐	☐	☐	☐
11. Knife or blade hand tools are used with the proper precautions	☐	☐	☐	☐
12. Consider controls to avoid muscular skeletal, repetitive motion, and cumulative trauma stressors	☐	☐	☐	☐
GENERAL (3.2.1)				
13. PPE is selected and used according to tool-specific hazards anticipated	☐	☐	☐	☐
14. Tools are tested daily to assure safety devices are operating properly	☐	☐	☐	☐
15. Damaged tools are removed from service until repaired	☐	☐	☐	☐
16. Power operated tools designed to accommodate guards have guards installed	☐	☐	☐	☐
17. Rotating or moving parts on tools are properly guarded	☐	☐	☐	☐
18. Machines designed for fixed locations are secured or anchored	☐	☐	☐	☐
19. Floor and bench-mounted grinders are provided with properly positioned work rests	☐	☐	☐	☐
20. Guards are provided at point of operation, nip points, rotating parts, etc.	☐	☐	☐	☐
21. Fluid used in hydraulic-powered tools is approved fire-resistant fluid	☐	☐	☐	☐
ELECTRIC-POWERED TOOLS (3.2.2)				
22. Electric tools are approved double insulated or grounded and used according to SOP HSE-206	☐	☐	☐	☐
23. Electric cords are not used for hoisting or lowering tools.	☐	☐	☐	☐
24. Electric tools are used in damp/ wet locations are approved for such locations or GFCI installed	☐	☐	☐	☐
25. Hand-held tools are equipped with appropriate on/off controls appropriate for the tool ☐	☐	☐	☐	
26. Portable, power-driven circular saws are equipped with proper guards	☐	☐	☐	☐
ABRASIVE WHEEL TOOLS (3.2.3)				
27. All employees using abrasive wheel tools are wearing eye protection	☐	☐	☐	☐
28. All grinding machines are supplied with sufficient power to maintain spindle speed	☐	☐	☐	☐
29. Abrasive wheels are closely inspected and ring-tested before use	☐	☐	☐	☐
30. Grinding wheels are properly installed	☐	☐	☐	☐
31. Cup-type wheels for external grinding are protected by the proper guard or flanges	☐	☐	☐	☐
32. Portable abrasive wheels used for internal grinding are protected by safety flanges	☐	☐	☐	☐
33. Safety flanges are used only with wheels designed to fit the flanges	☐	☐	☐	☐

34. Safety guards on abrasive wheel tools are mounted properly and of sufficient strength	☐	☐	☐	☐
PNEUMATIC-POWERED TOOLS (3.2.4)				
35. Tools are secured to hoses or whip by positive means to prevent disconnection	☐	☐	☐	☐
36. Safety clips or retainers are installed to prevent attachments being expelled	☐	☐	☐	☐
37. Safety devices are installed on automatic fastener feed tools as required	☐	☐	☐	☐
38. Compressed air is not used for cleaning unless reduced to < 30 psi, with PPE, and guarded	☐	☐	☐	☐
39. Manufacturer's safe operating pressure for hoses, pipes, valves, etc. are not exceeded	☐	☐	☐	☐
40. Hoses are not used for hoisting or lowering tools	☐	☐	☐	☐
41. All hoses >1/2-inch diameter have safety device at source to reduce pressure upon hose failure	☐	☐	☐	☐
42. Airless spray guns have required safety devices installed	☐	☐	☐	☐
43. Blast cleaning nozzles are equipped with operating valves, which are held open manually	☐	☐	☐	☐
44. Supports are provided for mounting nozzles when not in use	☐	☐	☐	☐
45. Air receiver drains, handholes, and manholes are easily accessible	☐	☐	☐	☐
46. Air receivers are equipped with drainpipes and valves for removal of accumulated oil and water	☐	☐	☐	☐
47. Air receivers are completely drained at required intervals	☐	☐	☐	☐
48. Air receivers are equipped with indicating pressure gauges	☐	☐	☐	☐
49. Safety, indicating, and controlling devices are installed as required	☐	☐	☐	☐
50. Safety valves are tested frequently and at regular intervals to assure good operating condition	☐	☐	☐	☐
LIQUID FUEL-POWERED TOOLS (3.2.5)				
51. Liquid fuel-powered tools are stopped when refueling, servicing, or maintaining	☐	☐	☐	☐
52. Liquid fuels are stored, handled, and transported in accordance with SOP HSE-403	☐	☐	☐	☐
53. Liquid fuel-powered tools are used in confined spaces in accordance with SOP HSE-203	☐	☐	☐	☐
54. Safe operating pressures of hoses, valves, pipes, filters, and other fittings are not exceeded	☐	☐	☐	☐
POWDER-ACTUATED TOOLS (3.2.6)				
55. Only trained employee operates powder-actuated tools	☐	☐	☐	☐
56. Powder-actuated tools are not loaded until just prior to intended firing time	☐	☐	☐	☐
57. Tools are not pointed at any employee at any time	☐	☐	☐	☐
58. Hands are kept clear of open barrel end	☐	☐	☐	☐
59. Loaded tools are not left unattended	☐	☐	☐	☐
60. Fasteners are not driven into very hard or brittle materials	☐	☐	☐	☐
61. Fasteners are not driven into easily penetrated materials unless suitable backing is provided	☐	☐	☐	☐
62. Fasteners are not driven into spalled areas	☐	☐	☐	☐
63. Powder-actuated tools are not used in an explosive or flammable atmosphere	☐	☐	☐	☐
64. All tools are used with correct shields, guards, or attachments recommended by manufacturer	☐	☐	☐	☐
JACKING TOOLS (3.2.7)				
65. Rated capacities are legibly marked on jacks and not exceeded	☐	☐	☐	☐
66. Jacks have a positive stop to prevent over-travel	☐	☐	☐	☐

67. The base of jacks are blocked or cribbed to provide a firm foundation, when required.	☐	☐	☐	☐
68. Wood blocks are place between the cap and load to prevent slippage, when required	☐	☐	☐	☐
69. After load is raised, it is cribbed, blocked, or otherwise secured immediately	☐	☐	☐	☐
70. Antifreeze is used when hydraulic jacks are exposed to freezing temperatures	☐	☐	☐	☐
71. All jacks are properly lubricated.	☐	☐	☐	☐
72. Jacks are inspected as required.	☐	☐	☐	☐
73. Repair or replacement parts are examined for possible defects.	☐	☐	☐	☐
74. Jacks not working properly are removed from service and repaired or replaced.	☐	☐	☐	☐
HAND TOOLS (3.2.8)				
75. Wrenches are not used when jaws are sprung to the point of slippage.	☐	☐	☐	☐
76. Impact tools are kept free of mushroomed heads.	☐	☐	☐	☐
77. Wooden handles of tools are kept free of splinters or cracks and are tightly fitted in tool ☐	☐	☐	☐	

SECTION 2

Complete this section for all items checked "No" in Section 1. Deficient items must be corrected in a timely manner.

Item #	Corrective Action Planned/Taken	Date Corrected

Auditor: _____ Project Manager: _____

HSSE Self-Assessment Checklist—LOCKOUT/TAGOUT

This checklist shall be used by LG Constructors personnel only and shall be completed at the frequency specified in the project's written safety plan.

This checklist is to be used when: 1) LG Constructors staff are exposed to lockout/tagout hazards (complete Personnel Safe Work Practices section only), 2) LG Constructors staff are self-performing lockout/tagout activities, or 3) LG Constructors provides oversight of subcontractor personnel who are performing lockout/tagout activities.

Safety Coordinator may consult with subcontractors when completing this checklist, but shall not direct the means and methods of lockout/tagout operations nor direct the details of corrective actions. Subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered imminently dangerous (possibility of serious injury or death) shall be corrected immediately, or all exposed personnel shall be removed from the hazard until corrected.

Project Name: _____ Project No.: _____

Location: _____ PM: _____

Auditor: _____ Title: _____ Date: _____

This specific checklist has been completed to:

☐ Evaluate LG Constructors affected employee exposure to equipment during lockout/tagout

☐ Evaluate LG Constructors authorized employee exposure to equipment requiring lockout/tagout

☐ Evaluate a LG Constructors subcontractor's compliance with lockout/tagout requirements

Subcontractors Name: _____

Check "Yes" if an assessment item is complete/correct.

Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 2 must be completed for all items checked "No."

Check "N/A" if an item is not applicable.

Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HSE-310.

SECTION 1

	Yes	No	N/A	N/O
PERSONNEL SAFE WORK PRACTICES (5.4)				
1. Only trained and authorized personnel are performing lockout/tagout activities	☐	☐	☐	☐
2. All affected employees notified prior to lockout/tagout activities	☐	☐	☐	☐
3. Equipment has been shutdown using normal operating controls	☐	☐	☐	☐
4. Employees do not attempt to start, energize or use equipment that is locked out or tagged	☐	☐	☐	☐
5. Employees do not remove locks or tags placed on equipment by other personnel	☐	☐	☐	☐
6. Affected employees are notified after lockout/tagout is completed	☐	☐	☐	☐
7. Employees verify that all safe guards have been replaced prior to equipment start-up	☐	☐	☐	☐
GENERAL (5.5.1)				
8. Only trained and authorized personnel are performing lockout/tagout activities	☐	☐	☐	☐
9. Daily safety briefing/meeting conducted with affected and authorized employees	☐	☐	☐	☐
10. Employees made aware of any equipment-specific lockout/tagout procedures	☐	☐	☐	☐
11. Authorized employees provided with lockout devices, locks, tags and other isolation devices	☐	☐	☐	☐
12. New or modified equipment designed to accept lockout devices	☐	☐	☐	☐
EQUIPMENT-SPECIFIC LOCKOUT/TAGOUT PROCEDURES (5.5.2)				
13. LOTO procedures available when required to be documented	☐	☐	☐	☐
14. Equipment-specific LOTO procedures developed when not available from the facility	☐	☐	☐	☐
15. Affected employees notified that equipment will be shut down for LOTO	☐	☐	☐	☐
16. Energy sources, hazards, and control measures determined	☐	☐	☐	☐
17. Orderly shutdown of equipment is conducted that does not increase hazards	☐	☐	☐	☐
18. Energy isolating devices operated to isolate energy sources	☐	☐	☐	☐
19. Authorized employees apply personal lockout devices and tags to energy isolating device	☐	☐	☐	☐
20. Lockout devices are applied to secure equipment in the “off” position	☐	☐	☐	☐
21. Lockout tags applied to clearly indicate that operating the equipment is prohibited	☐	☐	☐	☐
22. Tags are located as close to or at the energy isolating device	☐	☐	☐	☐
23. All hazardous stored or residual energy is relieved, disconnected or restrained	☐	☐	☐	☐
24. Isolation of energy sources has been verified (tested) prior to of work on equipment	☐	☐	☐	☐
25. Lockout tags are used alone only where lockout devices cannot be applied	☐	☐	☐	☐
LOCKOUT DEVICES AND TAGS (5.5.4)				
26. Lockout devices and tags only used to isolate energy sources	☐	☐	☐	☐
27. Lockout devices and tags are standardized by color, shape, size, print, and format	☐	☐	☐	☐
28. Lockout devices and tags indicate identity of employee applying the devices	☐	☐	☐	☐
29. Lockout devices and tags capable of withstanding anticipated environmental conditions of use	☐	☐	☐	☐
30. Lockout devices are substantial enough to prevent removal without the use of excessive force	☐	☐	☐	☐
31. Tags and their means of attachment are substantial enough to prevent inadvertent removal	☐	☐	☐	☐
32. Tags are legible and understandable by all employees	☐	☐	☐	☐
33. Tags warn against hazardous conditions if equipment is energized	☐	☐	☐	☐
RELEASING LOTO CONTROL (5.5.5)				
34. Work area inspected prior to removing LOTO devices and reenergization	☐	☐	☐	☐

35. LOTO devices only removed by authorized employees who applied the device	☐	☐	☐	☐
36. If employee not available to remove LOTO devices, steps in Section 4.2.4 of SOP followed	☐	☐	☐	☐
37. All affected employees notified prior to starting equipment previously locked or tagged out	☐	☐	☐	☐
GROUP LOTO (5.5.6)				
38. Group LOTO procedures followed when more than one employees is to work on equipment	☐	☐	☐	☐
39. Primary authorized person assigned to coordinate LOTO process	☐	☐	☐	☐
40. Normal steps for initiating LOTO control completed as above	☐	☐	☐	☐
41. Primary authorized person applies own lockout device and tag	☐	☐	☐	☐
42. Each authorized person applies own lockout device and tag	☐	☐	☐	☐
43. Primary authorized person removes LOTO devices after all other LOTO devices are removed	☐	☐	☐	☐
SPECIAL CONDITIONS (5.5.7)				
44. Shift or personnel changes coordinated to ensure LOTO protection is always provided	☐	☐	☐	☐
45. Procedures followed when LOTO devices are temporarily removed to test or reposition	☐	☐	☐	☐

SECTION 2

Complete this section for all items checked "No" in Section 1. Deficient items must be corrected in a timely manner.

Item #	Corrective Action Planned/Taken	Date Corrected

Auditor: _____ Project Manager: _____

HSSE Self-Assessment Checklist—RESPIRATORY PROTECTION

This checklist is provided as a method of verifying compliance with the OSHA respiratory protection standard. It shall be used at locations where LG Constructors personnel are using respiratory protection, or as a tool to assess subcontractors when LG Constructors is required to perform oversight of a subcontractor using respiratory protection.

LG Constructors staff shall not direct the means and methods of subcontractor use of respiratory protection nor direct the details of corrective actions. The subcontractor must determine how to correct deficiencies and LG Constructors staff must carefully rely on their expertise. Items considered to be imminently dangerous (i.e., possibility of serious injury or death) must be corrected immediately or all exposed personnel must be removed from the hazard until corrected.

Completed checklists must be sent to HSSE staff for review.

Project Name: _____ Project No.: _____

Location: _____ PM: _____

Auditor: _____ Title: _____ Date: _____

This specific checklist has been completed to:

☐ Evaluate LG Constructors compliance with its respiratory protection program (SOP HSEQ-121)

☐ Evaluate a LG Constructors subcontractor's respiratory protection program

Subcontractors Name: _____

Check "Yes" if an assessment item is complete/correct.

Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 2 must be completed for all items checked "No."

Check "N/A" if an item is not applicable.

Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HSE-121.

SECTION 1

	Yes	No	N/A	N/O
TRAINING (6.0)				
1. Respirator users have completed appropriate training on the respirator to be used	☐	☐	☐	☐
2. Training is current within the past 12 months	☐	☐	☐	☐
3. Attachment 1 of SOP HSE-121 distributed to employees using respirators voluntarily	☐	☐	☐	☐
MEDICAL EVALUATION (5.2)				
4. Respirator users completed medical evaluation protocol	☐	☐	☐	☐
5. Respirator use does not exceed any physician's written recommendation limitations	☐	☐	☐	☐
6. Respirator users know to report any medical signs or symptoms related to respirator use ☐	☐	☐	☐	
FIT TESTING (5.3)				
7. Respirator users of tight-fitting face pieces have passed a fit test	☐	☐	☐	☐
8. Fit test is current within the past 12 months.	☐	☐	☐	☐
9. Respirator users know to have new fit test performed if any change affects respirator fit	☐	☐	☐	☐
RESPIRATOR SELECTION (5.4)				
10. All feasible engineering controls have been considered in reducing exposure levels	☐	☐	☐	☐
11. Appropriate respiratory protection and limitations are specified in HSP/FSI	☐	☐	☐	☐
12. Cartridge or canister change-out schedule is specified in HSP/FSI	☐	☐	☐	☐
RESPIRATOR USE (5.5)				
13. Respirator uses are limited to those specified in HSP/FSI	☐	☐	☐	☐
14. HSM notified of changes in site conditions that may alter effectiveness of specified respirators	☐	☐	☐	☐
15. Respirator users of tight-fitting face pieces are cleanly shaven	☐	☐	☐	☐
16. Respirator users of tight-fitting face pieces perform user seal check before each use	☐	☐	☐	☐
17. Cartridges or canisters replaced according to change-out schedule in HSP/FSI	☐	☐	☐	☐
18. Respirator users informed to report any gas or vapor breakthrough to SSC/RHSM	☐	☐	☐	☐
19. SC reports any gas or vapor breakthrough to RHSM	☐	☐	☐	☐
20. Personnel not entering IDLH areas until standby-person established with appropriate equipment	☐	☐	☐	☐
RESPIRATOR INSPECTION (5.6)				
21. Respirators in regular use are inspected before each use and during cleaning	☐	☐	☐	☐
21. Emergency response respirators are inspected and documented monthly	☐	☐	☐	☐
22. Defective respirators are taken out of service or repaired	☐	☐	☐	☐
RESPIRATOR CLEANING AND DISINFECTING (5.7)				
23. Respirators in regular use are cleaned and disinfected as necessary	☐	☐	☐	☐
24. Emergency and transferred respirators are cleaned and disinfected after use	☐	☐	☐	☐
RESPIRATOR STORAGE (5.8)				
25. Respirators are properly stored to prevent contamination and deformation	☐	☐	☐	☐
26. Emergency respirators are accessible and clearly marked as emergency respirators	☐	☐	☐	☐
RESPIRATOR REPAIRS (5.9)				
27. Respirator repair is limited to routine maintenance	☐	☐	☐	☐
28. Respirators beyond routine repair are removed from service	☐	☐	☐	☐

BREATHING AIR SUPPLIED BY CYLINDER (5.10.1)				
29. Cylinders are marked with NIOSH-approval label	☐	☐	☐	☐
30. Certificate of analysis meets Grade D specifications	☐	☐	☐	☐
31. Certificate of analysis is kept onsite	☐	☐	☐	☐
BREATHING AIR SUPPLIED BY COMPRESSOR (5.10.2)				
32. Breathing air meets Grade D specifications	☐	☐	☐	☐
33. Compressor intake is located away from exhaust gases	☐	☐	☐	☐
34. Compressor is provided with sorbent filters	☐	☐	☐	☐
35. Sorbent filter change-out documentation is kept on the compressor	☐	☐	☐	☐
36. High-temperature or carbon monoxide alarm provided on oil-lubricated compressors	☐	☐	☐	☐
37. If high-temperature alarm is used alone, carbon monoxide levels are monitored	☐	☐	☐	☐
38. Practical measures taken to control carbon monoxide levels on non oil-lubricated compressors	☐	☐	☐	☐

SECTION 2

Complete this section for all items checked "No" in Section 1. Deficient items must be corrected in a timely manner.

Item #	Corrective Action Planned/Taken	Date Corrected

Auditor: _____ Project Manager: _____

HSSE Self-Assessment Checklist—SCAFFOLDS

This checklist shall be used by LG Constructors personnel only and shall be completed at the frequency specified in the project FSI.

This checklist is to be used at locations where: 1) LG Constructors employees work from scaffolds and/or 2) LG Constructors oversight of a scaffold subcontractor is required.

The SC may consult with scaffold subcontractors when completing this checklist, but shall not direct the means and methods of scaffold operations nor direct the details of corrective actions. Scaffold subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to HSSE staff for review.

Project Name: _____ Project No.: _____

Location: _____ PM: _____

Auditor: _____ Title: _____ Date: _____

This specific checklist has been completed to:

☐ Evaluate LG Constructors employee exposures to scaffold hazards

☐ Evaluate a LG Constructors subcontractor's compliance with scaffold H&S requirements

Subcontractors Name: _____

Check "Yes" if an assessment item is complete/correct.

Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 3 must be completed for all items checked "No."

Check "N/A" if an item is not applicable.

Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in HSE-311

SECTION 1

	Yes	No	N/A	N/O
PERSONNEL SAFE WORK PRACTICES (3.1)				
1. Competent person has completed work shift inspection and has authorized scaffold access	☐	☐	☐	☐
2. Personnel aware of and following access requirements established by competent person	☐	☐	☐	☐
3. Scaffold free from damage and in stable condition	☐	☐	☐	☐
4. Safe means of access provided to scaffold platform	☐	☐	☐	☐
5. Personnel remaining within guardrail system when provided	☐	☐	☐	☐
6. Personnel using personal fall arrest systems (PFAS) when required	☐	☐	☐	☐
7. Personnel working from suspension scaffolds or boatswains' chairs using PFAS	☐	☐	☐	☐
8. LG Constructors personnel have completed CH2M fall protection training when PFAS use required	☐	☐	☐	☐
9. Personnel not standing on objects or ladders on top of scaffold platforms	☐	☐	☐	☐
10. Personnel not using ladders on top of scaffold platforms unless platform covers the entire floor	☐	☐	☐	☐
11. Personnel not working on scaffolds covered with snow or ice	☐	☐	☐	☐
12. Personnel do not work on scaffolds during storms/high winds unless adequate protection provided	☐	☐	☐	☐
GENERAL (3.2.1)				
13. Scaffolds inspected by competent person before each work shift	☐	☐	☐	☐
14. Damaged or weakened scaffold components immediately repaired or replaced	☐	☐	☐	☐
15. Scaffolds not loaded in excess of their maximum intended load	☐	☐	☐	☐
16. Debris is not accumulating on scaffolds platforms	☐	☐	☐	☐
ASSEMBLY/DISASSEMBLY OF SCAFFOLDS (3.2.2)				
17. Scaffolds designed by qualified person	☐	☐	☐	☐
18. Scaffolds assembled/disassembled by experienced and trained personnel	☐	☐	☐	☐
19. Scaffolds assembled/disassembled under supervision and direction of competent person	☐	☐	☐	☐
20. Adequate planking provided, as determined by competent person	☐	☐	☐	☐
21. Adequate safe means of access provided, as determined by competent person	☐	☐	☐	☐
22. Adequate fall protection provided, as determined by competent person	☐	☐	☐	☐
SCAFFOLD CONSTRUCTION (3.2.3)				
23. Scaffolds capable of supporting own weight and 4 times maximum intended load	☐	☐	☐	☐
24. Compatible scaffold components used	☐	☐	☐	☐
25. Scaffolds uprights bear on stable foundations	☐	☐	☐	☐
26. Scaffolds adequately braced to prevent racking/collapse	☐	☐	☐	☐
27. Scaffolds plumb, level, and squared	☐	☐	☐	☐
28. Scaffolds with height to width ratios greater than 4:1 secured from tipping	☐	☐	☐	☐
29. Work platforms fully planked or decked	☐	☐	☐	☐
30. Platform planking extends over supports appropriate amount or restrained	☐	☐	☐	☐
31. Safe means of access is provided to platforms	☐	☐	☐	☐
32. Supported scaffolds > 10 feet provided with guardrails or PFAS	☐	☐	☐	☐
33. When required, adequate guardrail system installed on all platform open sides and ends	☐	☐	☐	☐

34. When required, adequate PFAS provided (may also use fall protection checklist HSE-308)	☐	☐	☐	☐
35. Falling object protection provided to personnel working on scaffolds/under scaffolds	☐	☐	☐	☐
36. Safe clearance maintained from overhead power lines	☐	☐	☐	☐
MOBILE SCAFFOLDS (3.2.4)				
37. Casters/wheels locked while scaffold used in the stationary position	☐	☐	☐	☐
38. Personnel not riding mobile scaffolds unless safe to move	☐	☐	☐	☐
SUSPENSION SCAFFOLDS (3.2.5)				
39. Suspension scaffolds and boatswains' chairs > 10 feet provided with personal fall arrest system	☐	☐	☐	☐
40. Supporting devices/counterweights secured to supporting structure	☐	☐	☐	☐
41. Supporting devices inspected by competent person prior to scaffold use	☐	☐	☐	☐
42. Ropes and connecting hardware capable of supporting 6 times the maximum intended load	☐	☐	☐	☐
43. Suspension ropes inspected by competent person before each work shift	☐	☐	☐	☐
44. Damaged or repaired wire rope not used as suspension rope	☐	☐	☐	☐
45. Suspension ropes joined together only by eye splice thimbles connected by shackles	☐	☐	☐	☐
46. Wire rope clips inspected/retightened after initial loading and before each work shift	☐	☐	☐	☐
47. Scaffold ropes protected from welding, heat, and corrosives	☐	☐	☐	☐
48. Scaffolds tied or otherwise secured from swaying	☐	☐	☐	☐
ADJUSTABLE SUSPENSION SCAFFOLDS (3.2.6)				
49. Adjustable suspension scaffolds > 10 feet provided with guardrails and PFAS	☐	☐	☐	☐
50. Supporting structures capable of resisting tipping moment	☐	☐	☐	☐
51. Hoist ropes restrained from passing through the hoist	☐	☐	☐	☐
52. Hoists have braking device/locking pawl that engages during scaffold uncontrolled movements	☐	☐	☐	☐
53. Manually operated hoists require positive crank force to lower	☐	☐	☐	☐
54. Scaffold hoist stall load less than 3 times its rated load	☐	☐	☐	☐
55. Gasoline-powered hoists not used	☐	☐	☐	☐

SECTION 3

Complete this section for all items checked "No" in Section 1. Deficient items must be corrected in a timely manner.

Item #	Corrective Action Planned/Taken	Date Corrected

Auditor: _____ Project Manager: _____

HSSE Self-Assessment Checklist—STAIRWAYS AND LADDERS

This checklist shall be used by LG Constructors personnel only and shall be completed at the frequency specified in the project FSI.

This checklist is to be used at locations where: (1) LG Constructors employees are using stairways and ladders and/or (2) LG Constructors provides oversight of subcontractor personnel who are using stairways and ladders.

SC may consult with subcontractors when completing this checklist, but shall not direct the means and methods of stairway and ladder use nor direct the details of corrective actions. Subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to the HSSE staff for review.

Project Name: _____ Project No.: _____

Location: _____ PM: _____

Auditor: _____ Title: _____ Date: _____

This specific checklist has been completed to:

☐ Evaluate LG Constructors employee use of stairways and ladders

☐ Evaluate a LG Constructors subcontractor's compliance with stairway and ladder requirements

Subcontractors Name: _____

Check "Yes" if an assessment item is complete/correct.

Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 2 must be completed for all items checked "No."

Check "N/A" if an item is not applicable.

Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HSE-214.

SECTION 1

	Yes	No	N/A	N/O
PERSONNEL SAFE WORK PRACTICES (3.1)				
1. LG Constructors employees have completed stairway and ladder training	☐	☐	☐	☐
2. Carrying objects on stairs with both hands is avoided	☐	☐	☐	☐
3. Pan and skeleton metal stairs not used until permanent or temporary treads/ landings provided	☐	☐	☐	☐
4. Ladders periodically inspected for defects by competent person	☐	☐	☐	☐
5. Defective ladders tagged and removed from service until repaired	☐	☐	☐	☐
6. Ladders used only for purpose for which they were designed	☐	☐	☐	☐
7. Ladders not loaded beyond their rated capacity	☐	☐	☐	☐
8. Only one person simultaneously climbing or working from an individual ladder	☐	☐	☐	☐
9. Personnel face ladder when climbing	☐	☐	☐	☐
10. Personnel climbing ladders maintain 3 points of contact with ladder	☐	☐	☐	☐
11. Personnel not carrying tools, materials, or equipment while climbing. Tag lines used	☐	☐	☐	☐
12. Ladders not moved, shifted or extended while in use	☐	☐	☐	☐
13. Stepladders used in open and locked position only	☐	☐	☐	☐
14. Stepladders top and top step not used as a step	☐	☐	☐	☐
15. Stepladders cross-bracing not used for climbing	☐	☐	☐	☐
16. Fall protection considered when working from ladders over 6’	☐	☐	☐	☐
STAIRWAYS AND LADDERS: GENERAL (3.2.1)				
17. Stairways or ladders provided at breaks in elevation ≥ 19 inches	☐	☐	☐	☐
18. At least one clear access point provided to elevated levels	☐	☐	☐	☐
STAIRWAY: DESIGN AND CONSTRUCTION (3.2.2)				
19. Stairways maintained free of slippery conditions and dangerous projections	☐	☐	☐	☐
20. Stairways installed between 30 - 50 degrees with uniform risers and treads	☐	☐	☐	☐
21. Landings (30” deep x 22” wide) provided every 12’ of vertical rise.	☐	☐	☐	☐
22. Landings extend ≥ 20” beyond swing of any doors	☐	☐	☐	☐
23. Adequate stair rails installed at each unprotected side or edge	☐	☐	☐	☐
24. Handrails installed as handhold for support	☐	☐	☐	☐
25. Mid-rails, screens, mesh, or intermediate members installed between top rail and treads	☐	☐	☐	☐
26. Adequate guardrails installed at each unprotected side or edge of a landing	☐	☐	☐	☐
LADDERS: GENERAL (3.2.3)				
27. Ladder components surfaced to prevent injury from puncture, laceration, or snagging clothing	☐	☐	☐	☐
28. Ladders maintained free of oil, grease, and other slipping hazards	☐	☐	☐	☐
29. The area around the top and bottom of ladders kept free of obstructions	☐	☐	☐	☐
PORTABLE LADDERS: DESIGN AND CONSTRUCTION (3.2.4)				
30. Only ANSI approved portable ladders used	☐	☐	☐	☐
31. Rungs and steps are parallel, level, and uniformly spaced	☐	☐	☐	☐
32. Ladders not tied or fastened together to create longer sections unless designed for such use	☐	☐	☐	☐
33. Ladders with non-conductive side rails used near energized electrical equipment	☐	☐	☐	☐
34. Extension ladders equipped with positive section stops	☐	☐	☐	☐
35. Stepladders provided with metal spreader or locking device to hold open when in use	☐	☐	☐	☐

36. Wood ladders not coated with opaque covering	☐	☐	☐	☐
37. Double-cleated or two ladders provided if > 25 personnel use ladders as only means of access, or when ladder serves simultaneous two-way traffic	☐	☐	☐	☐
38. Two or more ladders used to reach elevated work areas offset with platform or landing	☐	☐	☐	☐
PORTABLE LADDER: POSITIONING (3.2.5)				
39. Ladders used only on stable, level, surfaces unless secured to prevent movement	☐	☐	☐	☐
40. Ladders placed in areas where they can be displaced by work activities, secured or barricaded	☐	☐	☐	☐
41. Extension ladder section overlap adequate distance	☐	☐	☐	☐
42. Extension and straight ladders placed with both side rails supported equally	☐	☐	☐	☐
43. Extension and straight ladders positioned at approximately 75 degree angle	☐	☐	☐	☐
44. Ladders extend 3’ above upper landings or are secured at top	☐	☐	☐	☐
FIXED LADDERS: DESIGN AND CONSTRUCTION (3.2.6)				
45. Adequate clearances from obstructions maintained behind, in front, and to side of ladder rungs	☐	☐	☐	☐
46. Ladder step across distance at access point 7-12”	☐	☐	☐	☐
47. Side rails extend 42” above landing platform	☐	☐	☐	☐
48. Cages, wells, ladder safety devices, or self-retracting lifelines used for ladders > 24’	☐	☐	☐	☐
49. Ladder safety devices operate without the use of hands	☐	☐	☐	☐
50. Ladder safety devices activate within 2’ after a fall	☐	☐	☐	☐
51. Connection between lifeline and harness attachment point < 9”	☐	☐	☐	☐

SECTION 2

Complete this section for all items checked "No" in Section 1. Deficient items must be corrected in a timely manner.

Item #	Corrective Action Planned/Taken	Date Corrected

Auditor: _____ Project Manager: _____

HSSE Self-Assessment Checklist—STEEL ERECTION

This checklist shall be used by LG Constructors personnel only and are be completed at the frequency specified in the project FSI.

This checklist is to be used at locations where: 1) LG Constructors employees are exposed to steel erection (complete Personnel Safe Work Practices only) and/or 2) LG Constructors provides oversight of subcontractor personnel who are exposed to steel erection hazards.

The SC may consult with subcontractors when completing this checklist, but may not direct the means and methods of steel erection operations nor direct the details of corrective actions. Subcontractors will determine how to correct deficiencies, and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) are to be corrected immediately or all exposed personnel are to be removed from the hazard until corrected.

Completed checklists are to be sent to the HSSE staff for review.

Project Name: _____ Project No.: _____

Location: _____ PM: _____

Auditor: _____ Title: _____ Date: _____

This specific checklist has been completed to:

☐ Evaluate LG Constructors employee exposure to steel erection hazards

☐ Evaluate a LG Constructors subcontractor's compliance with steel erection requirements

Subcontractors Name: _____

Check "Yes" if an assessment item is complete/correct.

Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 2 must be completed for all items checked "No."

Check "N/A" if an item is not applicable.

Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in HSE-312

SECTION 1

	Yes	No	N/A	N/O
PERSONNEL SAFE WORK PRACTICES (3.1)				
1. Fall protection is used as outlined in SOP HSE-308 “Fall Protection.”	☐	☐	☐	☐
2. Floor holes/openings are guarded or covered and labeled appropriately.	☐	☐	☐	☐
3. Stability of structure is evaluated before, during, and after steel erection.	☐	☐	☐	☐
4. Tools and hardware have been prevented from falling into work operations on lower levels.	☐	☐	☐	☐
5. Employees do not ride on suspended loads.	☐	☐	☐	☐
6. Tag lines are used to control loads.	☐	☐	☐	☐
7. Employees do not walk under suspended loads.	☐	☐	☐	☐
WORKING SURFACES (3.2.1)				
8. Permanent floors are installed as the erection of structural members progresses.	☐	☐	☐	☐
9. At no time are there more than 4 floors or 48 feet of unfinished bolting or welding.	☐	☐	☐	☐
10. The derrick or erection floor is solidly planked/decked over its entire surface.	☐	☐	☐	☐
11. Skeleton steel erection has substantially maintained flooring within 2 stories or 30 feet below.	☐	☐	☐	☐
12. Gathering and stacking temporary floor planks is conducted as required.	☐	☐	☐	☐
13. Gathering and stacking temporary floor planks is conducted with appropriate fall protection.	☐	☐	☐	☐
14. For double-wood floor construction, the rough flooring is completed as the building progresses.	☐	☐	☐	☐
15. For single and other wood flooring, required flooring is planked or decked over.	☐	☐	☐	☐
16. Wood planking is at least 2 inches thick, ¾ inch exterior grade plywood, or equivalent material.	☐	☐	☐	☐
17. Metal decking of sufficient strength has been laid tight and secured to prevent movement.	☐	☐	☐	☐
18. Planks overlap the bearing on each end by a minimum of 12 inches.	☐	☐	☐	☐
19. Wire mesh, plywood, or equivalent, is used around columns where planks do not fit tightly.	☐	☐	☐	☐
20. Provisions have been made to secure temporary flooring against displacement.	☐	☐	☐	☐
21. All unused openings in floors have been completely planked over or guarded.	☐	☐	☐	☐
STABILITY OF STRUCTURES (3.2.2)				
22. Loads are not released from the hoisting line until the members are secured as required.	☐	☐	☐	☐
23. Open web steel joists are not placed on structural steel framework unless safely bolted/welded.	☐	☐	☐	☐
24. In steel framing, a bar joist is field-bolted at columns for lateral stability where required.	☐	☐	☐	☐
25. For long-span joists/trusses, a center row of bolted bridging is installed for lateral stability.	☐	☐	☐	☐
26. No loads are placed on open web steel joists until all stability requirements are met.	☐	☐	☐	☐
27. Tag lines are to be used for controlling loads.	☐	☐	☐	☐
28. Connections of plumbing-up equipment are properly secured.	☐	☐	☐	☐
29. Turnbuckles are secured to prevent unwinding while under stress.	☐	☐	☐	☐
30. Plumbing-up guys and related equipment are placed to provide access to connection points.	☐	☐	☐	☐
31. Plumbing-up guys are removed only under the supervision of a competent person.	☐	☐	☐	☐

32. Employees use personal fall arrest systems when working from float scaffolds.	☐	☐	☐	☐
TOOLS AND EQUIPMENT (3.2.3)				
33. Containers are provided for storing/carrying rivets, bolts, and drift pins and secured against accident displacement when aloft.	☐	☐	☐	☐
34. Pneumatic hand tools are disconnected from the power source, and pressure in hose lines released, before any adjustments or repairs made.	☐	☐	☐	☐
35. Airline hose sections are tied together when required.	☐	☐	☐	☐
36. Eye protection is provided for employees where there is the possibility of eye injury.	☐	☐	☐	☐
37. Bolts, drift pins, and rivet heads are prevented from falling when being knocked out.	☐	☐	☐	☐
38. Impact wrenches have locking device for retaining sockets.	☐	☐	☐	☐
39. Precautions are taken to prevent fire while riveting in the vicinity of combustible material.	☐	☐	☐	☐
40. Rivet head are prevented from falling when being knocked off or backed out.	☐	☐	☐	☐
41. A safety wire is installed and used on the snap and handle of pneumatic riveting hammers.	☐	☐	☐	☐

SECTION 2

Complete this section for all items checked "No" in Section 1. Deficient items must be corrected in a timely manner.

Item #	Corrective Action Planned/Taken	Date Corrected

Auditor: _____ Project Manager: _____

HSSE Self-Assessment Checklist—WELDING AND CUTTING

This checklist shall be used by LG Constructors personnel only and shall be completed at the frequency specified in the project FSI.

This checklist is to be used at locations where: 1) LG Constructors employees are exposed to welding and cutting hazards (complete Personnel Safe Work Practices section only) and/or 2) LG Constructors provides oversight of subcontractor personnel who are exposed to welding and cutting hazards.

The SC may consult with subcontractors when completing this checklist, but shall not direct the means and methods of welding and cutting operations nor direct the details of corrective actions. Subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to the HSSE staff for review.

Project Name: _____ Project No.: _____

Location: _____ PM: _____

Auditor: _____ Title: _____ Date: _____

This specific checklist has been completed to:

☐ Evaluate LG Constructors employee exposure to welding and cutting hazards

☐ Evaluate a LG Constructors subcontractor's compliance with welding and cutting requirements

Subcontractors Name: _____

Check "Yes" if an assessment item is complete/correct.

Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 2 must be completed for all items checked "No."

Check "N/A" if an item is not applicable.

Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in HSE-314

SECTION 1

	Yes	No	N/A	N/O
SAFE WORK PRACTICES (5.1)				
1. LG Constructors employees have completed Welding and Cutting training	☐	☐	☐	☐
2. Welding and cutting personnel have been properly trained and qualified	☐	☐	☐	☐
3. Work area inspected by the authorized person	☐	☐	☐	☐
4. Suitable fire extinguishing equipment is available	☐	☐	☐	☐
5. Flame-resistant blankets used to control sparks from travelling to lower levels	☐	☐	☐	☐
6. Leaking valves of cylinders repaired or tagged and removed from service	☐	☐	☐	☐
7. Top of cylinder or manifold kept clear to prevent damage and allow quick closing of valve	☐	☐	☐	☐
8. Flow gauges and regulators on cylinders inspected prior to use and removed when not in use	☐	☐	☐	☐
9. Hose, leads, and cables covered, elevated, or protected from damage.	☐	☐	☐	☐
10. Fuel gas and oxygen cylinders in storage separated or protected with fire barrier	☐	☐	☐	☐
11. Flash arresters are installed at the torch handle	☐	☐	☐	☐
12. Hot electrode holders not dipped in water to cool	☐	☐	☐	☐
13. Arc welding electrodes not struck against cylinders to strike an arc	☐	☐	☐	☐
14. Arc welding or cutting work shielded with screens to prevent employees from arc	☐	☐	☐	☐
15. Proper ventilation provided to maintain exposure to contaminants below PEL	☐	☐	☐	☐
16. Arc welding equipment exposed to unusual service conditions is task designed	☐	☐	☐	☐
COMPRESSED GAS CYLINDERS (5.2.2)				
17. Cylinders being transported have valve protection caps installed and in vertical position	☐	☐	☐	☐
18. Cylinders hoisted by cradle, slingboard or pallet designed to do so and not by valve cap	☐	☐	☐	☐
19 Cylinders kept from being knocked over by a chain, truck or steadying device	☐	☐	☐	☐
20. Oxygen cylinders are separated from fuel-gas cylinders by 20 feet or a 5 foot fire barrier	☐	☐	☐	☐
21. Cylinders stored indoors in a well ventilated location, where they won't be knocked over☐	☐	☐	☐	
22. Cylinders in use are kept away from sparks, flames or slag or are shielded	☐	☐	☐	☐
23. Valves are "cracked" prior to attaching regulators	☐	☐	☐	☐
24. Cylinders are not placed where they can become part of an electrical circuit	☐	☐	☐	☐
25. Oxygen or fuel-gas cylinders are outside of confined spaces	☐	☐	☐	☐
26. Cylinders, valves, couplings, regulators and valves are free of grease and oil	☐	☐	☐	☐
27. Frozen cylinders are thawed with warm water and not boiling water	☐	☐	☐	☐
28. Fuel-gas cylinders are opened not more than 1.5 turns for quick closing	☐	☐	☐	☐
29. Damaged, defective or leaking cylinders have been removed from service	☐	☐	☐	☐
30. Only owner or authorized agent refills cylinders or attempts to mix gasses in cylinder	☐	☐	☐	☐
WELDING AND CUTTING EQUIPMENT (5.2.3)				
31. Fuel-gas and oxygen manifolds are labeled with one inch letters or sign to identify substance	☐	☐	☐	☐
32. Fuel-gas and oxygen manifolds are working properly & located in a well ventilated open area	☐	☐	☐	☐
33. Manifold and header hoses capped when not in use	☐	☐	☐	☐
34. Flash arresters are used on acetylene cylinders connected together	☐	☐	☐	☐

35. Fuel-gas and oxygen hoses are clearly marked, not interchangeable and free of grease and oil	☐	☐	☐	☐
36. Parallel sections of hose taped together have no more than 4 inches covered per foot	☐	☐	☐	☐
37. Torches and hoses are inspected at the beginning of each shift	☐	☐	☐	☐
38. Hoses connections are designed to be disconnected with a rotary motion, not straight pull	☐	☐	☐	☐
39. Hoses are stored in a ventilated box	☐	☐	☐	☐
40. Torches are lit with friction lighters, not open flames or hot work	☐	☐	☐	☐
ARC WELDING AND CUTTING (5.2.4)				
41. Only manual electrode holders designed for arc welding are used	☐	☐	☐	☐
42. Only cable free of repair/splices < 10 ft. from cable attachment to electrode holder are used	☐	☐	☐	☐
43. All parts of the welding and cutting equipment that are gripped are fully insulated	☐	☐	☐	☐
44. All welding and cutting cables are fully insulated	☐	☐	☐	☐
45. Pipelines containing flammable gases or liquids are not used as a ground return	☐	☐	☐	☐
46. All ground connections have been inspected for mechanical strength and current capacity				
47. Frame of arc welding/cutting machine is grounded.				
48. When electrode holders are unattended, the electrode is removed	☐	☐	☐	☐
49. Hot electrode holder are not be dipped in water to cool	☐	☐	☐	☐
50. When welding or cutting is stopped or equipment is moved, power is shut off	☐	☐	☐	☐
51. Before starting welding and cutting operations the equipment is inspected	☐	☐	☐	☐
52. The frame or case of the welding machine is grounded (except engine driven machines)	☐	☐	☐	☐
53. Employees in the vicinity are shielded from the direct rays of the arc, or given filter lenses	☐	☐	☐	☐
54. Inert gas welding employees are completely covered to prevent skin burns	☐	☐	☐	☐
55. Chlorinated solvents are >200 feet away and surfaces prepared w/ solvents are dry prior	☐	☐	☐	☐
TOXIC FUMES AND GASES (5.2.5)				
56. Mechanical or local exhaust ventilation is used when welding or cutting in a confined space	☐	☐	☐	☐
57. Mechanical ventilation is capable of keeping fumes and smoke below the exposure limits	☐	☐	☐	☐
58. Local exhaust ventilation is close to the work to keep employee below the exposure limits	☐	☐	☐	☐
59. Contaminated air is exhausted into open air clear of the intake	☐	☐	☐	☐
60. Exhausted air is replaced by breathable air, and not oxygen	☐	☐	☐	☐
61. Welding/cutting in confined space on toxic metals is done w/ ventilation or supplied air	☐	☐	☐	☐
62 Welding/cutting in open air on metals outlined in 3.2.4 done with filter or air line respirator	☐	☐	☐	☐
63. Workers exposed to the same atmosphere as welder are protected in the same manner	☐	☐	☐	☐
64. In enclosed spaces, all surfaces covered with preservative coating are stripped at least four inches from the area to be heated, or the worker is protected with an air line respirator	☐	☐	☐	☐

FIRE PREVENTION (5.2.6)				
65. Objects to be welded or cut have been moved to a safe location	☐	☐	☐	☐
66. Combustibles have been moved at least 35 feet from welding and cutting	☐	☐	☐	☐
67. Combustibles that cannot be moved are protected from flame, heat and sparks	☐	☐	☐	☐
68. Fire extinguishing equipment is immediately available in the work area	☐	☐	☐	☐
69. Additional trained personnel (fire watch) assigned when normal fire fighting is not sufficient	☐	☐	☐	☐
70. The atmosphere to be welded or cut in is not explosive as verified by air monitoring, as needed	☐	☐	☐	☐
71. Precautions have been taken on the opposite side of walls, floors and ceilings	☐	☐	☐	☐
72. Openings in floors and walls are blocked to prevent sparks from passing through	☐	☐	☐	☐
73. Gas supply can be shut off at some point outside an enclosed space	☐	☐	☐	☐
74. Drums have been filled with water, cleaned or ventilated and tested before welding or cutting	☐	☐	☐	☐
75. Drums, containers or structures have an open vent before heat is applied	☐	☐	☐	☐
76. Surface coatings have been tested for flammability before welding or cutting	☐	☐	☐	☐
77. Flammable coatings have been stripped before welding or cutting	☐	☐	☐	☐
PERSONAL PROTECTIVE EQUIPMENT (5.2.7)				
78. When welding or cutting on surfaces with preservative coatings, respirators used	☐	☐	☐	☐
79. Workers entering a confined space through a small opening wear a full body harness or other suitable device for quick removal in case of an emergency	☐	☐	☐	☐
80. Employees welding or cutting wear the proper eye protective equipment as per Table 1	☐	☐	☐	☐
81. Welders or cutters exposed to other welders arc wear filter goggles under their helmets	☐	☐	☐	☐
82. Exposed employees wearing protective clothing to protect against UV damage	☐	☐	☐	☐
83. Fall protection is provided when working 6 feet or more above lower levels	☐	☐	☐	☐

SECTION 2

Complete this section for all items checked "No" in Section 1. Deficient items must be corrected in a timely manner.

Item #	Corrective Action Planned/Taken	Date Corrected

Auditor: _____ Project Manager: _____

LG Constructors FSI

Attachment 3

Project Activity Forms and Permits

AERIAL LIFT INSPECTION FORM

This form shall be used to document LG Constructors aerial lift inspections. Aerial lifts shall be inspected each day and each shift prior to use. All components shall be inspected for damage and proper operation. Any component failing the inspection shall be corrected prior to using the aerial lift. Check each box after passing inspection and initial bottom of form each day.

Aerial lift brand: _____ Identification #: _____ Week of: _____

INSPECTION ITEM	Mo	Tu	We	Th	Fri	Sat	Su
Visual Checks							
Operating manual present							
Capacity ratings - visible and legible							
Lift controls labeled as to their function - visible and legible							
Tires – proper inflation and not excessively worn							
Fluid levels and leaks –levels adequate, no leaks							
Hydraulics – no fluid leaks, connections tight, piston free of debris							
Hoses/belts – held securely, not loose or rubbing, no excessive wear or crimping							
Structural members – no damage, no cracks or bends, loose or missing bolts/pins							
Insulating components – no damage							
Control guards – in place							
Guardrails/safety chains – in place, good condition							
Fall protection connection point – present, no damage							
Electric units - battery charged, in good condition, connections tight - no corrosion							
Gasoline/diesel units – fuel tank free of damage, all valves/hoses secure							
LPG units - propane tank free of damage, secured to forklift in designated position							
Operational Checks – check items through normal maneuvers							
Operating and Warning Lights							
Gauges/Indicators – visible and working properly							
Upper (platform) and lower (ground) controls – functioning properly							
Outriggers, if present – functioning properly							
Brakes - brings unit to complete stop							
Steering - responsive, minimal looseness							
Exhaust system – in good condition, no signs of sparks or leaks							
Inspectors Initials							

LG Constructors Confined-Space Entry Permit

1.0 GENERAL INFORMATION

Project:	Project #:	PM:
Date of Entry:	Duration of Entry:	Permit Expiration Date:
Space Location:		
Description of Space:		
Purpose of Entry:		

Hazards Expected: ☐ Oxygen Deficiency ☐ Oxygen Enrichment ☐ Flammable Vapors ☐ Temperature Extremes ☐ Entrapment ☐ Engulfment ☐ Fall ☐ Electrical ☐ Mechanical ☐ Chemical ☐ Pressure ☐ Combustible Dust ☐ Toxics (specify): ☐ Others (specify):

Entry Supervisor (ES):	Attendant(s):

2.0 CONTROL MEASURE REQUIREMENTS

Communication: ☐ Visual ☐ Voice ☐ Radio ☐ Cell Phone ☐ Other (specify):

Cleaning: ☐ None ☐ Purging ☐ Inerting ☐ Flushing Date/Time Completed:

Isolation: ☐ None ☐ Lockout/Tagout ☐ Line Breaking ☐ Blinding/Blanking ☐ Double Block & Bleed ☐ Other (specify): Date/Time Completed:

Ventilation: ☐ None ☐ Prior to Entry ☐ Continuous ☐ Periodic (specify frequency): ☐ Type (specify): Date/Time Completed:

Protective Equipment: ☐ GFCI ☐ Low-voltage Lighting: ☐ Fire Extinguisher ☐ Fall Protection ☐ First Aid Kit ☐ Respirators (specify): Other (specify):

Rescue Equipment: ☐ Harness ☐ Lifeline ☐ Tripod ☐ Retrieval Device ☐ Other (specify):

Other Requirements: ☐ Hot Work Permit ☐ Other (specify):

3.0 RESCUE AND EMERGENCY PROCEDURES

4.0 ATMOSPHERIC MONITORING

Frequency: ☐ Prior to Each Entry ☐ Prior to Shift ☐ Continuous ☐ Periodic (specify):

Instruments: ☐ Combustible Gas Indicator ☐ FID ☐ PID ☐ Colorimetric Tubes ☐ CO Monitor ☐ H_2S Monitor ☐ Other(specify):

Substances Monitored: ☒ Oxygen ☒ Flammables ☐ CO ☐ H2S ☐ Other (specify):

Monitoring Results			**Oxygen**	**Flammability**	**Toxicity**		
Monitors	Limits		19.5 – 23.5 %	< 10 % of LEL	< PEL/TLV		
Initials	Date	Time	%	% of LEL	Substance	Level	Limit

5.0 PERMIT APPROVAL, AUTHORIZATION, AND CANCELLATION

	Signature	Employee Number	Date	Time
HS&E Approval				
ES Permit Authorized				
ES Permit Canceled				

6.0 AUTHORIZATION/ACCOUNTABILITY LOG

The following individuals have successfully completed confined space training, have attended a preentry briefing, and are authorized to enter the space.

	ES Initials		Attendant: check each time an individual enters or exits the space											
Name of Entrant	Trained	Briefed	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out

LG Constructors Confined Space Alternative Procedure Certificate

Alternative procedures may be used for permit-required confined-space entry if the only hazard within the space is an atmospheric hazard and the hazard can be controlled to acceptable safe levels solely by forced-air ventilation. If the space must be entered to determine hazards, the initial entry must be done in full compliance with the requirements of a confined-space entry permit.

These alternative procedures are valid as long as the atmospheric hazards are controlled by forced-air ventilation. If additional hazards arise within the space, or the forced-air ventilation is inadequate in controlling the atmospheric hazard, personnel must exit the space immediately and reevaluate the space.

1.0 GENERAL INFORMATION		
Project:	Project #:	PM:
Date of Entry:	Duration of Entry:	Expiration Date:
Space Location:		
Description of Space:		
Purpose of Entry:		
Atmospheric Hazards Expected: ☐ Oxygen Deficiency ☐ Oxygen Enrichment ☐ Flammable Vapors ☐ Toxics (specify)::		
Entry Supervisor (ES):	Attendant(s):	

2.0 CERTIFICATE REQUIREMENTS

☐ Nonatmospheric hazards do not exist in this space
☐ Communication methods established between entrants and the attendant
☐ Covers can be removed safely
☐ Space openings guarded from fall hazards and falling objects
☐ Continuous forced-air ventilation from a clean air source is positioned in the immediate area where entrants are working and continue until they have left the space

3.0 ATMOSPHERIC MONITORING

Frequency: ☒ Prior to Entry ☐ Continuous ☒ Periodic (specify):

Instruments: ☐ Combustible Gas Indicator ☐ FID ☐ PID ☐ Colorimetric Tubes ☐ CO Monitor ☐ H_2S Monitor ☐ Other(specify):

Substances Monitored: ☒ Oxygen ☒ Flammables ☐ CO ☐ H2S ☐ Other (specify):

Monitoring Results			**Oxygen**	**Flammability**	**Toxicity**		
Monitors	Limits		19.5 – 23.5 %	< 10 % of LEL	< PEL/TLV		
Initials	Date	Time	%	% of LEL	Substance	Level	Limit

4.0 CERTIFICATE AUTHORIZATION AND CANCELLATION

	Entry Supervisor Signature	Employee Number	Date	Time
Entry Authorized				
Entry Canceled				
Problems Encountered During Entry				

5.0 AUTHORIZATION/ACCOUNTABILITY LOG

The following individuals have successfully completed confined space training, have attended a preentry briefing, and are authorized to enter the space.

	ES Initials		Attendant: check each time an individual enters or exits the space											
Name of Entrant	Trained	Briefed	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out

EARTHMOVING EQUIPMENT OPERATOR EVALUATION FORM

LG Constructors employees who are required to operate earthmoving equipment shall be evaluated and approved as qualified earthmoving equipment operators by an authorized LG Constructors Earthmoving Equipment Operator Evaluation Designated Persons (DP).

This form shall be used by the DP to assess, approve, and document the qualifications of LG Constructors employees who are required to operate earthmoving equipment.

Employee (Operator) Name: _____ LG Constructors employee #: _____

LG Constructors Company: _____ Business Group: _____ Region: _____

Type of equipment to be operated:_____

1. Background Review

Resume and other documentation (training certificates) shall be reviewed and verified with previous employers. The individual shall also possess a valid driver's license. This review should take place prior to hiring.

☐ Background Review found to be adequate. Date: ___/___/____ DP initials: _____

2. Classroom Evaluation

a. Employee shall read and understand the manufacturer's Equipment Operation Manual for the specific piece of equipment to be operated.
b. Employee shall read and understand the LG Constructors *Earthmoving Equipment* (HSE-306) and *Excavations* (HSE-32) Standards of Practice.
c. DP shall discuss safe operating practices with the employee.
d. Employee shall pass LG Constructors written earthmoving equipment operator exam. (See Attachment 2 for exam guidelines)

☐ Classroom Evaluation successfully completed. Date: ___/___/____ DP initials: _____

3. Field Evaluation

a. Equipment Awareness, Inspection and Maintenance

The DP shall observe the employee perform a daily inspection using the Earthmoving Equipment Inspection Form. The employee shall demonstrate the ability to recognize deficient conditions that could affect the safe operation of the equipment. In addition, the operator shall demonstrate awareness of the following:

☐ Location of vital fluid reservoirs
☐ Location of all lubrication points
☐ Proper fueling procedures
☐ Location and function of safety disabling devices (if equipped)
☐ Location and function of safety devices (fire extinguisher, back-up alarm, seat belt/bar, guards)
☐ Location of manufacturer warning labels, weight of equipment, and lift capacities labels
☐ Location and function of all gauges, indicators and controls (horn, lights, mirrors, etc.)
☐ Acceptable conditions for passing items during daily inspections
☐ Periodic maintenance requirements

EARTHMOVING EQUIPMENT OPERATOR EVALUATION FORM

b. Equipment Operation

The DP shall observe the employee operating the equipment through normal maneuvers. The employee shall demonstrate the ability to operate the equipment safely and in accordance with the manufacturer's guidelines.

- ☐ Demonstrates ability to safely start equipment (proper start-up sequence followed)
- ☐ Understands function and proper appearance of all gauges and indicators
- ☐ Understands location and use of all equipment controls
- ☐ Checks front, side, and rear of equipment for pedestrians, traffic and obstructions
- ☐ Demonstrates smooth and safe equipment travel
- ☐ Demonstrates smooth and safe control operations
- ☐ Demonstrates safe loading and binding of equipment for travel
- ☐ Demonstrates normal shut-down procedures
- ☐ Demonstrates emergency shut-down procedures
- ☐ Demonstrates safe parking and storage of equipment

☐ Field Evaluation successfully completed. Date: ___/___/____ DP initials: _____

Operator Acknowledgement

I have reviewed and understand all of the information listed above. I also understand that as an operator of this equipment, I am responsible for daily inspections and maintenance as well as the safe and efficient operation of the equipment listed above.

_____	_____	_____
Operator Name	Signature	Date

Qualification approval

The employee has completed the earthmoving equipment operator evaluation process and is qualified to operate the type of earthmoving equipment identified above.

_____	_____	_____
DP Name	Signature	Date
_____	_____	_____
HSSE Name	Signature	Date

A copy of this evaluation form shall be maintained in the project file and the original sent to the HSSE department for retention.

LG Constructors

EARTHMOVING EQUIPMENT INSPECTION FORM

This form shall be used to document LG Constructors earthmoving equipment inspections. Earthmoving equipment shall be inspected each day and shift prior to use. All components shall be inspected for damage and proper operation. Any component failing the inspection shall be corrected prior to earthmoving equipment use. Check each box after passing inspection and initial bottom of form each day.

Equipment Name: _____ Identification #: _____ Week of: _____

INSPECTION ITEM	M	Tu	W	Th	Fri	Sat	Su
Visual Checks							
Operating manual – present							
Controls – labeled for function, visible and legible, safety latches/guards present							
Tires/tracks – proper inflation/tension, not excessively worn or damaged							
Fluid levels/leaks - engine, transmission, hydraulic, radiator, swing motor & PTO oils							
Lubrication - to the manufacturer's specifications							
Air filter gauge - gauge is not in the red zone.							
Hydraulics – no fluid leaks, connections tight, hoses, cylinders free of damage.							
Hoses/belts – held securely, not loose or rubbing, no excessive wear or crimping							
Fuel system - tank free of damage, all valves/hoses secure, no leaks							
Body & ground-engaging tools – no damage, cracks, bends, or excessive wear.							
Cylinders/articulation joints– no worn pins, loose connections or other damage.							
Roll-over protective structures (ROPS) - no damage, no cracks or bends							
Seat belt/bar – required unless operator stands or no ROPS							
Handrails, steps, platforms – clean, free from grease, oil, clear of obstructions.							
Cab glass – safety glass, clean, no cracks or visible distortion							
Mirrors – properly adjusted, no cracks or visible distortion							
Windshield wipers, fluid, and defroster - functioning							
Machine guards – present and in good condition							
Fire extinguisher – present and charged							
Operational Checks – check items through normal maneuvers							
Horn & back-up alarm – operating and distinguishable from surrounding noise							
Lights, directional signals, and brake lights - functioning							
Gauges/indicators – visible and working properly							
Operating controls - lift and tilt functioning properly							
Outriggers, if present – functioning properly							
Accelerator - even acceleration, does not stick							
Brakes (service & parking) - brings to complete stop, holds in fixed position							
Steering – responsive, minimal looseness							
Exhaust system – guarded if potential for contact, no signs of sparks/leaks							
Inspector's Initials							

EXCAVATION PLANNING CHECKLIST

This checklist shall only be used by LG Constructors when self-performing excavation activities and shall be completed by LG Constructors excavation competent person during excavation activities. Personnel shall be permitted to enter excavations only after the LG Constructors Excavation Entry Permit has been completed, authorized by the excavation competent person, and posted at the excavation entrance.

GENERAL INFORMATION

Project/Site Name: _____ Project Number: _____
Name/Location of Excavation: _____ _
Scope of Work Description: _____
Excavation Depth: _____ Excavation Width: _____

PRIOR TO EXCAVATING

- ☐ Personnel meet training and medical surveillance requirements
- ☐ Dig permit obtained, where required by client/facility
- ☐ Client, installation owners, and utility companies contacted for exact location of underground utilities/installations
- ☐ Detection equipment used when exact location of underground utilities is unknown
- ☐ Soils to be excavated have been classified: ☐ Stable Rock ☐ Type A ☐ Type B ☐ Type C
  - ☐ Combination, describe: _____
  - **NOTE: If soils unclassified, assume to be Type C**
- ☐ Groundwater table and stormwater run-off evaluated
- ☐ Area evaluated for existence of ordnance explosives (OE) and unexploded ordnance (UXO)

The Environmental Compliance Coordinator (ECC) should be consulted for the following requirements:

- ☐ Soils characterized where contamination may be present
- ☐ USDA (or local equivalent) soil permit obtained for soil transport
- ☐ Excavation evaluated for wetlands, endangered species, cultural/historic resources
- ☐ ACOE/CWA 404 (or local equivalent) permit obtained for wetland areas
- ☐ Stockpile management plan prepared to address national, state, and local regulations
- ☐ Waste discharge/NPDES (or local equivalent) permit obtained for excavation dewatering
- ☐ Storm Water Pollution Prevention or Erosion & Sediment Control Plan prepared, where required

GENERAL REQUIREMENTS

- ☐ Daily safety briefing/meeting conducted with excavation personnel
- ☐ Guardrails provided on walkways over excavation 6′ (1.5 m in Australia) or deeper
- ☐ Barriers provided at excavations 6′ (1.5 m in Australia) or deeper when not readily visible
- ☐ Barriers/covers provided for wells, pits, shafts, or similar excavation 6′ (1.5 m in Australia) or deeper
- ☐ Earthmoving equipment operated safely (use earthmoving equipment checklist in HS-27)
- ☐ Personnel provided with and wearing appropriate PPE

EXCAVATING ACTIVITIES

- ☐ Rocks, trees, and other unstable surface objects removed or supported
- ☐ Exposed underground utility lines supported
- ☐ Undermined surface structures supported or determined to be in safe condition
- ☐ Warning system used to remind equipment operators of excavation edge
- ☐ Stockpile covers/liners and excavation silt fences/covers provided, where required (consult ECC)
- ☐ Fugitive dust suppressed

PROTECTIVE SYSTEMS USE

- ☐ Protective systems used for excavations 5′ (1.5 m) or deeper, unless stable rock
- ☐ Protective systems for excavation deeper than 20′ (6.1 m) designed by registered PE
- ☐ Protective systems used: ☐ Sloping ☐ Shoring ☐ Trench Box ☐ Combination
  Describe: _____
- ☐ Sloping cut to appropriate angle of incline for soil classification (if unclassified, assume Type C soil)
- ☐ Shoring/trench boxes used according to manufacturer recommendations and not subjected to loads exceeding design limits
- ☐ Protective system components securely connected to prevent movement or failure
- ☐ Protective systems inspected daily and free from damage
- ☐ Defective protective systems replaced or corrected
- ☐ Personnel removed from shielding systems when installed, removed, or during vertical movement

PROTECTIVE SYSTEM REMOVAL and BACKFILLING

- ☐ Protective system removal starts and progresses from excavation bottom
- ☐ Protective systems removed slowly and cautiously
- ☐ Temporary structure supports used if failure of remaining components observed
- ☐ Backfilling taking place immediately after protective system removal
- ☐ Backfill certified clean when required by client or local regulation (consult ECC)

EXCAVATING AT HAZARDOUS WASTE SITES

- ☐ Waste disposed of according to Health & Safety Plan and RCRA regulations
- ☐ Appropriate decontamination procedures being followed, per Health & Safety Plan

EXCAVATING AT ORDNANCE EXPLOSIVES SITES

- ☐ OE plan prepared and approved by LG Constructors UXO Safety Officer
- ☐ OE/UXO avoidance provided, access routes cleared, and boundaries marked prior to excavation
- ☐ Personnel remain inside marked boundary
- ☐ Earthmoving equipment does not excavate closer than 1′ (30.5 cm) to anomalies

LG Constructors Excavation Competent Person Name:
_____

LG Constructors Excavation Competent Person Signature:
_____

Date Completed: ___/___/_____

EXCAVATION ENTRY PERMIT

This permit shall only be used by LG Constructors when self-performing excavation activities and shall be completed by a LG Constructors excavation competent person. A new permit shall be completed each day authorizing excavation entry. Personnel entering excavations shall verify that a current permit is completed, authorized, and posted at the excavation location prior to entry. Personnel shall exit the excavation and notify the excavation competent person of any unsafe condition or violation of this permit.

Excavations are required to be inspected by an excavation competent person each day, as needed throughout the work shift, and after every rain or other event that could increase the potential for excavation cave-in. This permit shall document that such an inspection has been conducted and that all precautions have been taken to ensure safe entry.

GENERAL INFORMATION

Project/Site Name: _____ Project Number: _____
Name/Location of Excavation: _____
Scope of Work Description: _____

EXCAVATION ENTRY PRECAUTIONS

- ☐ No tension cracks/fractures or evidence of caving, sloughing, or weak zones observed in soil
- ☐ Precautions taken to prevent surface water from entering excavation
- ☐ Water is not accumulating in excavation
- ☐ When water removal equipment used, it is monitored for proper operation
- ☐ Air monitoring conducted for excavations with hazardous atmospheres potential
- ☐ If hazardous atmosphere, ventilation used to bring conditions to safe level and tested frequently
- ☐ If ventilation unable to bring conditions to safe level, appropriate respiratory protection used
- ☐ Rescue equipment provided where potential for hazardous atmospheres exists
- ☐ Protective systems provided to prevent excavation cave-in
- ☐ Protective systems used: ☐ Benching ☐ Sloping ☐ Shoring ☐ Trench Box ☐ Combination
  Describe: _____
- ☐ Protective systems inspected and are free from damage and in stable condition
- ☐ Sloping cut to appropriate angle of incline for soil classification
- ☐ Shoring installed according to design and secured from movement
- ☐ Hydraulic shores maintained at designed pressure
- ☐ Trench boxes not subjected to loads exceeding design limits
- ☐ Vehicular traffic diverted an adequate distance from excavation
- ☐ Spoil piles, equipment, and materials restrained or kept at least 2′ (61 cm) from excavation edge
- ☐ Protection provided from material falling/rolling into excavation
- ☐ Safe means of egress provided every 25′ (7.6 m) inside excavation
- ☐ Personnel entering excavation briefed and understand planned work and safety precautions
- ☐ Additional precautions taken when entering to repair damaged or unstable protective systems

ENTRY APPROVAL

LG Constructors Excavation Competent Person Name:
_____

LG Constructors Excavation Competent Person Signature:
_____

Date/Time Entry Authorized: ____/____/_____ ____:____

LG Constructors

ENERGIZED ELECTRICAL WORK PERMIT

This permit is to be used when work must be performed on energized electrical equipment. This permit is intended to be used for specific equipment/tasks and should not be used in a generic manner.

PROJECT/TASK INFORMATION

Project name: _____ Project number: _____
Date task to start: _____ Estimated duration of work: _____
Description of task:
_____
_____
_____

EQUIPMENT INFORMATION

Equipment description and location:
_____
Describe reason(s) why electrical parts cannot be de-energized:
_____
_____
Describe the construction and operations of the equipment:
_____
_____
Describe the hazards involved with this work activity:
_____
_____

CONTROL MEASURES

Personal protective equipment: ☐Safety glasses ☐Face shield ☐Insulated boots ☐Non-conductive head protection ☐Insulated voltage-rated gloves

☐Insulated sleeves ☐Leather glove protectors ☐Fire resistant (FR) clothing ☐ Other: _____

Isolation and shielding materials: ☐Safety grounding cables ☐Insulated mats ☐Insulated blankets ☐Voltage-rated ground equipment

☐Other:_____

Tools: ☐Insulated voltage-rated tools ☐Isolating/operating sticks ☐Fuse handling equipment ☐Other: _____

_____

Testing equipment:
_____

Other equipment: ☐Auxiliary lighting ☐Non-conductive ladders ☐Non-conductive ropes/handlines ☐Safety signs, tags, barricades

☐Fire extinguisher ☐ Other: _____

PROCEDURES

Has a step-by-step work procedure been created for the work to be done? Y N Attach procedure to permit.

The following individuals have reviewed, understood, and agreed to abide by the provisions of the step-by-step procedure and this permit. They have also successfully completed the 10-Hour Construction Safety Awareness or General Electrical Safety training modules.

NAME	SIGNATURE	DATE

SIGNATURE APPROVALS

Client/Owner of equipment: _____ Date: _____
Approving LG Constructors Supervisor: _____ Date: _____

EQUIPMENT-SPECIFIC LOCKOUT/TAGOUT PROCEDURE DEVELOPMENT FORM

Project name: _____ Project No.: _____
Equipment (name, number): _____ Equipment location: _____
Authorized employee that developed this procedure: _____ Date: _____

Purpose
This procedure establishes minimum requirements for the lockout/tagout of energy isolating devices when servicing and maintenance activities are performed on the above equipment. It shall be used to ensure that the equipment is stopped, isolated from all potentially hazardous energy sources and locked out and tagged before employees perform any servicing and maintenance where the unexpected energization, start-up, or release of energy could cause injury.

Compliance With This Procedure
All employees are required to comply with the restrictions and limitations imposed upon them during the use of lockout/tagout. The authorized employees are required to perform the lockout/tagout in accordance with this procedure. All employees, upon observing equipment that is locked/tagged out shall not attempt to start, energize, or use the equipment.

Authorized Employee	Specific servicing and maintenance activity to be performed
_____	_____
_____	_____
_____	_____

Sequence of Initiating Lockout/Tagout Control

1) Notify all affected employees that servicing and maintenance is required and that the equipment must be shut down and this lockout/tagout procedure implemented.

Affected Employee(s) Notified

_____ _____ _____

_____ _____ _____

2) Authorized employee(s) shall identify the type and magnitude of the energy that the equipment uses, and shall understand the hazards and the methods to control the energy.

Energy Sources	Magnitude	Hazards	Control Methods
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

3) If the equipment is operating, shut it down by the normal stopping procedures listed below.

Equipment shutdown steps: _____
_____

4) Locate and operate energy isolating device(s) to isolate the equipment from the energy source(s).

Energy Isolating Device	Location	Isolated
_____	_____	☐
_____	_____	☐
_____	_____	☐

EQUIPMENT-SPECIFIC LOCKOUT/TAGOUT PROCEDURE DEVELOPMENT FORM

5) Authorized employee(s) shall apply their personal lockout device and tag to each energy isolating device. Lockout devices and tags shall meet the requirements provided in Section 4.2.3 of the Lockout/Tagout SOP, HSE-310. When servicing and maintenance activities are to be performed by more than one authorized employee, a primary authorized employee shall be identified and a group lockout/tagout process shall be used that meets the requirements provided in Section 4.2.5 of the Lockout/Tagout SOP, HSE-310.

Primary Authorized Employee: _____ **Phone No.:** _____

6) Stored or residual energy shall be dissipated or restrained

Type(s) of stored energy	**Methods to dissipate or restrain**
_____	_____
_____	_____
_____	_____

7) Authorized employee(s) shall verify that isolation of the equipment has been completed by trying to operate the equipment using normal operating control(s) or by testing to verify that the equipment will not operate. Control(s) shall be returned to the neutral or "off" position after isolations are verified.

Method(s) used to verify equipment isolation: _____
_____
_____

Sequence of Releasing Lockout/Tagout Control

1) Verify that all personnel in the work area are in a safe position.
2) Ensure all nonessential items have been removed and equipment components are operationally intact, including the proper reattachment of all equipment safe guards.
3) Verify that the controls are in neutral or “off” position.
4) Each lockout device and tag shall be removed from each energy isolating device by the authorized employee who applied the devices. If an authorized employee is unavailable to remove their device, the requirements provided in Section 4.2.4 of the Lockout/Tagout SOP, HSE-310 shall be followed.
5) All affected employees shall be notified that the lockout devices and tags have been removed before starting the equipment.

Special Conditions

Shift or personnel changes made during servicing and maintenance activities shall be coordinated to ensure lockout/tagout protection is always provided, including the orderly transfer of lockout devices and tags between off-going and oncoming authorized employees.

Method(s) of lockout/tagout control transfer: _____
_____
_____

When lockout devices and tags must be temporarily removed from the energy isolating device and the equipment energized to test or reposition the equipment, the following sequence shall be followed:

1) Clear equipment of tools and materials and remove all employees from the equipment area.
2) Remove only lockout devices and tags needed to energize equipment for testing or repositioning.
3) Energize and proceed with testing or repositioning.
4) Deenergize the equipment and reapply the lockout devices and tags to continue servicing.

Other Requirements: _____
_____

FALL PROTECTION EVALUATION FORM

This form is to be completed by the LG Constructors project SC prior to performing activities that expose LG Constructors personnel to fall hazards.

The form is used to: 1) identify project fall hazards and determine fall protection systems available to mitigate the hazards, 2) identify personal fall arrest system equipment required, and 3) provide project-specific fall protection training. Activities and work locations must be evaluated to determine potential fall hazards. If personnel are exposed to fall hazards greater than 6 feet during construction activities or 4 feet during general industry activities, fall protection systems must be used.

PROJECT INFORMATION

Project Name:_____ Project Number: _____ Date: _____
Scope of Work: _____
Work Area: _____ Maximum Working Height: _____
Describe fall hazard activities: _____

FALL HAZARD DETERMINATION & FALL PROTECTION SYSTEMS

		CONVENTIONAL SYSTEMS				ALTERNATIVE SYSTEMS				
	FALL HAZARD	Guardrail	Safety Net	PFAS	Cover	Positioning Device	Warning Line	Controlled Access Zone	Safety Monitoring	Fall Protection Plan
	Unprotected sides & edges									
	Leading edges									*
	Holes									
	Wall openings									
	Ramps, runways & walkways									
	Hoist areas									
	Excavations									
	Wells, pits & shafts									
	Dangerous equipment									
	Formwork & reinforcing steel work									
	Precast concrete erection									*
	Overhand bricklaying									
	Low-slope roofing work									
	Steep roof									
	Residential construction									*
	Other surfaces									

* Fall protection plans may only be used if conventional systems are determined to be infeasible or would create a greater hazard. Contact HS&E Staff for plan development. Shading indicates fall protection systems that are not permitted for the fall hazard listed.

PERSONAL FALL ARREST SYSTEM EQUIPMENT REQUIRED

	Full body harness		Lanyard, standard		Lifeline, horizontal
	Boatswain's chair		Lanyard, shock-absorbing		Lifeline, vertical
	Descent system		Lanyard, ripstitch		Lifeline, self-retracting
	Rope grab		Lanyard, self-retracting		Winch
	Other equipment:				

TRAINING REQUIREMENTS

The SC shall use this form to inform project staff of the potential fall hazards and specific fall protection systems to be used to control the hazards. SC shall instruct staff on the proper use, limitations, and inspection procedures for each fall protection component and system.

_____ _____
SC Signature Date

PROJECT FALL PROTECTION EVALUATION FORM - TRAINING SIGNOFF SHEET

Personnel listed below may be exposed to fall hazards on this project and have successfully completed: 1) LG Constructors initial fall protection training, and 2) project-specific training on the actual fall protection equipment and systems to be used. Employees agree to abide by the training received.

Project Name: _____ Project Number: _____

SC Name: _____

Employee name	Office	Training completed (SC initials)	
		Initial Program	Project-specific

LG Constructors

FORKLIFT INSPECTION FORM

This form shall be used to document LG Constructors forklift inspections. Forklifts shall be inspected each day prior to use. All components shall be inspected for damage and proper operation. Any component failing the inspection shall be corrected prior to forklift use. Check each box after passing inspection and initial bottom of form each day.

Forklift Brand: _____ Identification #: _____ Week of: _____

INSPECTION ITEM	M	Tu	W	Th	Fri	Sa	Su
Visual Checks							
ID Plate - visible and legible, lifting capacity adequate to perform the designated task							
Tires - tread in good condition, not excessively worn, no punctures							
Forks/Backrest/Mast – no damage, no cracks or bends, no loose or missing bolts/pins							
Carriage/Chain - greased, links intact, no excessive slack or unusual wear, free to travel							
Overhead Guard - structural soundness, no cracks, nothing on top or impeding vision							
Hydraulics – no fluid leaks, piston free of debris							
Fluid levels – levels adequate, no leaks							
Hoses/belts – held securely, not loose or rubbing, no excessive wear or crimping							
Electric units - battery charged and in good condition, connections tight - no corrosion							
Gasoline/diesel units – fuel tank free of damage, all valves/hoses secure							
LPG units - propane tank free of damage and secured to forklift in designated position							
Seat belt or lap bar							
Fire extinguisher – present and charged							
Mirrors							
Guards – present and in good condition							
Operational Checks – check items through normal maneuvers							
Horn							
Operating and warning lights							
Directional signals							
Back-up alarm							
Gauges/indicators – visible and working properly							
Hydraulic controls - mast lift and tilt							
Accelerator - even acceleration, does not stick							
Brakes - brings to complete stop, parking brake holds in fixed position							
Dead man brake – seat actuated							
Steering - responsive, minimal looseness							
Clutch – verify that transmission disengaged							
Exhaust system – in good condition, no signs of sparks or leaks							
Inspector's Initials							

LG Constructors

BLOODBORNE PATHOGEN

HSE-202

PPE and Decontamination Agents

SUMMARY OF PPE AND DECONTAMINATION AGENTS (USED TO REDUCE EXPOSURES TO BLOODBORNE PATHOGENS)					
Location and Activity	**Gloves**	**Body**	**Foot**	**Face, Eyes, Nose**	**Decontamination Agent**
Render first aid/CPR, clean spilled blood	Latex gloves provided in bloodborne pathogen protection kit	Normal work attire; however, take care to avoid contaminating clothing with victim's blood	Normal work attire	Mouth shield, eye goggles, mask as provided in bloodborne pathogen protection kit	Use powder and antiseptic wipes provided in bloodborne pathogen protection kit
Waste characterization study; sorting or sampling refuse; contact with medical, dental, or biological wastestream	Latex inner gloves with PVC outer gloves or with puncture resistant utility outer gloves as appropriate	Tyvek coveralls or cotton coveralls with a rubber apron	Steel-toe/steel-shank puncture resistant boot	Safety goggles, glasses, or full-face shield; or full-face air-purifying respirator with HEPA filter	5.25% household bleach diluted between 1:10 and 1:100 with water for equipment; soap and water for hands and face
Any task not described above with potential occupational exposure	Determined on a task specific basis	Determined on a task specific basis	Determined on a task specific basis	Determined on a task specific basis	5.25% household bleach diluted between 1:10 and 1:100 with water for equipment; soap and water for hands and face

LG Constructors

Vaccination Declination Form

I understand that in my course of employment with LG Constructors, I may be at risk of acquiring _____ infection, a serious disease. I have been given the opportunity by LG Constructors to be vaccinated with the _____ vaccine (the "Vaccination"), at no charge to myself (when I follow LG Constructors procedures).

I have also been encouraged to speak with LG Constructors occupational physician (1-800-219-8043) at no charge and my private physician regarding potential medical risks posed by my declination of the vaccination.

Based upon the information I have obtained, I have decided to decline the Vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring the serious disease noted above.

If, in the future, I am eligible (per LG Constructors vaccination program) and I want to be vaccinated with _____ vaccine, I understand that LG Constructors will make the vaccination series available to me at no charge (when I follow LG Constructors procedures).

Acknowledged and Agreed:

Print Name: _____ Employee Number: _____

Signed: _____ Date: _____

Note: This form is used when an employee declines a vaccination under the following circumstances: 1) the employee is potentially exposed to agents causing Hepatitis A, Hepatitis B, Tetanus and/or Typhoid and 2) LG Constructors occupational physician recommended vaccinations.

LG Constructors FSI

Attachment 4

Behavior-Based Loss Prevention System Forms

Task Hazard Analysis Table

(Refer to Hazard Controls section)

POTENTIALHAZARDS	TASKS BREAKDOWN									
Aerial Lifts (HSE-301)										
Buried/overhead Utilities										
Compressed Gas Cylinders										
Concrete Work (HSE-302)										
Confined Space Entry (HSE-203)										
Cranes and Hoisting (HSE-303)										
Demolition (HSE-305)										
Drilling Safety (HSE-204)										
Earthmoving Equipment (HSE-306)										
Electrical Safety (HSE-206)										
Excavation and Trenching (HSE-307)										
Fall Protection (HSE-308)										
Fire Prevention (HSE-208)										
Flammable/combustible liquids										
Forklift operations (HSE-309)										
Ladders & Stairways (HSE-214)										
Lockout & Tagout (HSE-310)										
Manual Lifting (HSE-112)										
Material Handling										
PPE (HSE-117)										
Potential Chemical/Radiation exposures										
Power Tools (HSE-210)										
Process Safety (HSE-213)										
Scaffolding (HSE-311)										
Steel Erection (HSE-312)										
Traffic Control(HSE-216)										
Tunneling/shaft operation (HSE-313)										
Welding and cutting (HSE-314)										

LG Constructors

DETAILED TASK HAZARD ANALYSIS

TASK/AREA: _____	Prepared by: _____	Date/Time: _____
Company Name: _____	Supervisor: _____	

Description of work:

_____

_____

_____

_____

_____

_____

TASK BREAKDOWN *(subtasks required to complete the task)*	**IDENTIFY & ANALYZE THE HAZARDS** *(chemical, physical, safety, and biological/environmental hazards)*	**IDENTIFY HAZARD CONTROLS** *(task training, equipment inspections, permits, air monitoring procedures, required PPE, emergency procedures, etc.)*

Personnel to Perform Task

MY SUPERVISOR HAS REVIEWED THE THA FORM WITH ME AND I HAVE RECEIVED THE NECESSARY TRAINING TO PERFORM THIS TASK SAFELY.

NAME	SIGNATURE	DATE

LG Constructors

SAFETY PRE-TASK PLANNING

PTP (Pre-Task Plan)

Date: _____ Company: _____

Description of Activity: _____

Supervisor: _____ Location of Task: _____

EVALUATING YOUR WORK AREA (Circle Yes or No)

Have you walked your area?	Yes	No	Do you have the PPE needed for this task?	Yes	No
Are you working around live systems?	Yes	No	Are the required materials and tools provided?	Yes	No
Does this task require special training?	Yes	No	Have all tools/equipment been inspected before use?	Yes	No
Is an MSDS review necessary for this task?	Yes	No	Does this task involve a confined space?	Yes	No
Is air monitoring required?	Yes	No	Should the Safety Dept. be involved in this planning?	Yes	No
Are work permits required for this task?	Yes	No	Is there a safety issue that has not been addressed?	Yes	No
Are you familiar with evacuation routes?	Yes	No			

Has emergency equipment such as fire extinguishers, eyewash stations, safety showers, and phones been located? Yes No

If the work area is congested, has the work plan been coordinated with other crafts? Yes No

Potential Hazard Checklist (Place a Checkmark if applicable)

___ Pinch Points	___ Inadequate Access	___ Hazardous Chemicals	___ Falls from Elevations
___ Thermal Burns	___ High Noise Levels	___ Heat Exhaustion/Stress	___ Confined Spaces
___ Particles in Eyes	___ Falling Objects	___ Sharp Objects or Tools	___ Line Breaking
___ Elevated Work	___ Manual Lifting	___ Radiation	___ Inhalation Hazard
___ Poor Housekeeping	___ Chemical Spill	___ Excavations	___ Critical Lift
___ Electrical Shock	___ Plant Operations	___ Lockout/Tagout	___ Other:
___ Chemical Burns	___ Scaffolding	___ Ladders	
___ Fire/Explosion	___ Mobile Equipment	___ Rigging	

Personal Protective Equipment

List PPE Required:

Description of Work Performed	Hazards Associated with Each Step	Required Actions to Eliminate or Control the Hazard

PTP

Description of Work Performed	Hazards Associated with Each Step	Required Actions to Eliminate or Control the Hazard

Work Crew Sign-off: (Signature)

LG Constructors FSI

Attachment 5

Audit Findings Table

LG Constructors

HSSE Audit Findings Table

Site: _____ **Audit conducted by:** _____ **Company:**_____ **Date:** _____

#	Observation	Recommended Corrective Action	Required Date of Correction	Action Taken	Date Completed	Comments

LG Constructors FSI

Attachment 6

Incident Forms

LG Constructors

24/7 physician access

Injured on the job—who do you call?

The Injury Management/Return to Work program has a different hotline number—and some improvements:

- Direct access is available with a nurse and physician—24/7
- The physician coordinates the employee's visit to the clinic for treatment and follow-up

Look for your Injury Management/Return to Work card at your office or project site—keep yours with you wherever you go.

Remember—if you get injured or sick on the job, report to your supervisor and call the number!

For more information please visit us on the VO at:

Company Resources | Corporate Groups | Health, Safety, Security, and Environment

HSSE

HS-08-0129B-MKT

LG Constructors

Root Cause Analysis Form

Root Cause Analysis (RCA)

Root Cause Categories (RCC): Select the RCC numbered below that applies for the root cause (RC) and/or contributing factor (CF) in the first column, then describe the specific root cause and corrective actions in each column.

1. **Lack of skill or knowledge**
2. **Lack of or inadequate operational procedures or work standards**
3. **Inadequate communication of expectations regarding procedures or work standards**
4. **Inadequate tools or equipment**
5. **Correct way takes more time and/or requires more effort**
6. **Short-cutting standard procedures is positively reinforced or tolerated**
7. **Person thinks there is no personal benefit to always doing the job according to standards**

#	Root Cause(s)	Corrective Actions	RC[1]	CF[2]	Due Date	Complete Date	Date Verified

[1] RC = Root Cause; [2] CF = Contributing Factors (check which applies)

Investigation Team Members

Name	Job Title	Date

Results of Solution Verification and Validation

Reviewed By

Name	Job Title	Date

Determination of Root Cause(s)

For minor losses or near losses the information may be gathered by the supervisor or other personnel immediately following the loss. Based on the complexity of the situation, this information may be all that is necessary to enable the investigation team to analyze the loss, to determine the root cause, and to develop recommendations. More complex situations may require the investigation team to revisit the loss site or re-interview key witnesses to obtain answers to questions that may arise during the investigation process.

Photographs or videotapes of the scene and damaged equipment should be taken from all sides and from various distances. This point is especially important when the investigation team will not be able to review the loss scene.

The investigation team must use the Root Cause Analysis Flow Chart to assist in identifying the root cause(s) of a loss. Any loss may have one or more "root causes" and "contributing factors". The "root cause" is the primary or immediate cause of the incident, while a "contributing factor" is a condition or event that contributes to the incident happening, but is not the primary cause of the incident. Root causes and contributing factors that relate to the *person* involved in the loss, his or her peers, or the supervisor should be referred to as "personal factors". Causes that pertain to the *system* within which the loss or injury occurred should be referred to as "job factors".

<u>Personal Factors</u>

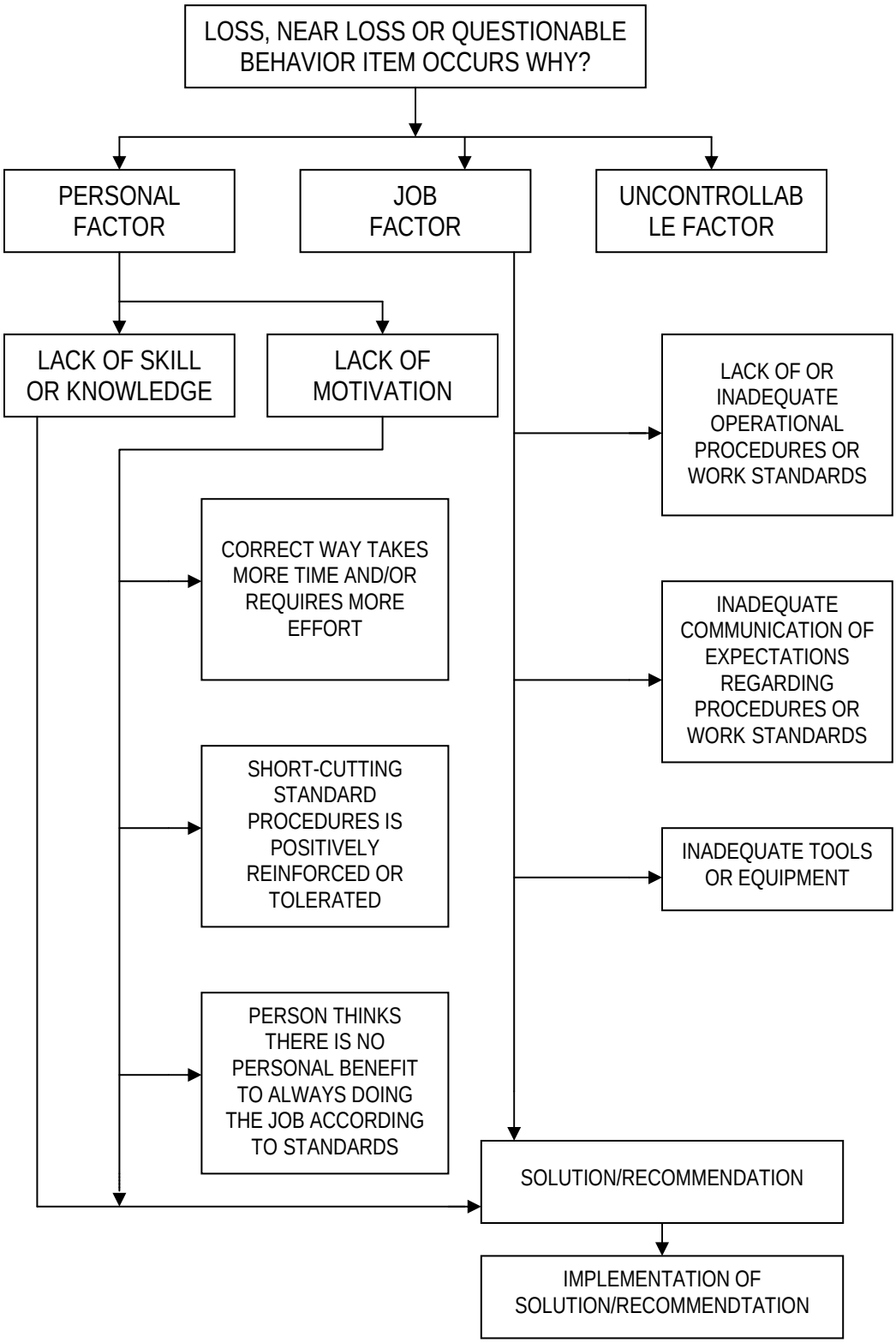
- Lack of skill of knowledge
- Correct way takes more time and/or requires more effort
- Short-cutting standard procedures is positively reinforced or tolerated
- Person thinks that there is no personal benefit to always doing the job according to standards

<u>Job Factors</u>

- Lack of or inadequate operational procedures or work standards.
- Inadequate communication of expectations regarding procedures or standards
- Inadequate tools or equipment

The root cause(s) could be any one or a combination of these seven possibilities or some other "uncontrollable factor". In the vast majority of losses, the root cause is very much related to one or more of these seven factors. Uncontrollable factors should be used rarely and only after a thorough review eliminates "all" seven other factors.

Root Cause Analysis
Flow Chart



LG Constructors FSI

Attachment 7

Stop Work Order Form

LG Constructors

Stop Work Order Form

A WORK STOPPAGE IS ISSUED FOR NONPERFORMANCE ISSUE(S) SPECIFIED BELOW AND SHALL REMAIN IN EFFECT UNTIL ALL CORRECTIVE ACTIONS ARE COMPLETED.

REPORT PREPARED BY:

Name:	Title:	Signature:	Date:

ISSUE OF NONPERFORMANCE

Description:_____	Date of Nonperformance:
_____ _____ _____ _____ _____	_____

SUBCONTRACTOR SIGNATURE OF NOTIFICATION:

Name:	Title:	Signature:	Date:

** Corrective action is to be taken immediately. Note below the action taken, sign and return to LG Constructors.**

SUBCONTRACTOR'S CORRECTIVE ACTION

Description:_____	Date of Corrective Actions:
_____ _____ _____ _____ _____	_____

SUBCONTRACTOR SIGNATURE OF CORRECTION:

Name:	Title:	Signature:	Date:

LG Constructors FSI

Attachment 8

Observed Hazard Form

LG Constructors

Observed Hazard Form

Name/Company of Observer:	
Date Reported:	Time Reported:
Contractor(s) Performing Unsafe Act or Creating Unsafe Condition: 1. _____ 2. _____ 3. _____	
Unsafe Act or Condition: _____ _____ _____ _____ _____	
Location of Unsafe Act or Condition: _____ _____ _____	
Name of LG Constructors Representative:	
Corrective Actions Taken: _____ _____ _____ _____	Date:
Project Safety Committee Evaluation: _____ _____ _____ _____	Date:

LG Constructors FSI

Attachment 9

Critical Lift Plan

Critical Lift Plan

CRITICAL LIFT PERMIT

Section 1 – Lift Summary

Job/Work Order: _____ Unit/Area: _____ Date: _____ Time: _____

Object Being Lifted: _____

Lift Description (Pick to Set Up): _____

Section 2 – Pre-Lift Plan (Initial Each Space)

		Y	N
1.	Equipment inventory completed?		
2.	Weather conditions been considered?		
3.	PTP conducted?		
4.	Safe rigging practices implemented?		
5.	Method of attachment/handling determined?		
6.	Lifting lugs engineered to specifications?		
7.	Matting inspected and approved?		
8.	Stability of the ground been assured?		
9.	Tag line to be used?		
10.	Connecting/disconnecting means determined?		
11.	Orientation of equipment confirmed?		
	Survey equipment required?		
13.	Pre-Lift meeting held?		
14.	Total weight below 85% of capacity?		

Section 3 – Load & Capacity Calculations

A. Weight of Equipment (Live Load)

1. Equipment Condition New ___ Used ___
2. Weight Empty _____ lbs
3. Weight of Attachments _____ lbs
   a. Platforms and Ladders _____ lbs
   b. Piping and Accessories _____ lbs
   c. Liquids Inside _____ lbs
   d. Dirt & Debris _____ lbs
   e. Refractory _____ lbs
   f. Internal Trays or Liners _____ lbs

B. Wt. Of Crane Accessories (consider those on tailing crane)

1. Weight of headache ball, block, jib & wire rope _____ lbs
2. Weight of Lifting Bar _____ lbs
3. Weight of Slings & Shackles _____ lbs

Total Weight _____ lbs

Section 4 – Crane and Rigging Details

A. Erection Crane

1. Type of Crane: _____
2. Rated Capacity: _____ tons
3. Lifting Arrangement
   a. Max distance, center of load to center pin of crane _____ feet
   b. Length of Boom _____ feet
   c. Angle of Boom @ Pick-up _____ deg
   d. Angle of Boom at Set _____ deg
   e. Gross chart capacity of crane _____ lbs
4. Net Load on Crane _____ lbs
5. Percent Crane Capacity (must be <85% of load capacity chart) _____ %

B. Slings & Shackles

1. Sling Selection
   a. Type of Arrangement
      Vertical ____ Basket ____ Choked ____
   b. Number of Slings in Hook-Up _____
   c. Sling Load _____ lbs
   d. Sling Size/Capacity (SWL) _____ lbs
2. Shackle Selection
   a. Stock Diameter _____ in
   b. Capacity _____ tons

C. Tailing Crane

1. Type of Crane:
2. Rated Capacity _____ tons
3. Lifting Arrangement
   a. Maximum Distance, center of load to center pin of crane _____ feet
   b. Length of Boom (feet) _____ feet
   c. Angle of Boom at Pick-Up _____ deg
   d Angle of Boom at Set _____ deg
   e. Gross chart capacity of crane _____ lbs
4. Max load on Tailing Crane _____ lbs
5. Percent Crane Capacity (must be <85% of load capacity chart) _____ %

Required Attachments:

1. Pre-Lift Meeting attendance roster
2. Crane Operator certifications
3. Most recent inspection report for each crane, to include type, size, capacity rating, manufacturer, capacity certificate & hook inspection documentation
4. Complete rigging diagram

Section 5 – Authorization Signatures Date

_____ _____
Crane Operator

_____ _____
Company Supervisor

_____ _____
Contractor Supervisor

_____ _____
Rigging Supervisor

_____ _____
(Other)

LG Constructors™

PROPRIETARY NOTICE

The data, information, concepts, and approaches contained herein are proprietary information and shall not be disclosed to third parties without the express written consent of CH2M HILL. It shall not be duplicated, used, or disclosed in whole or in part for any purpose other than the consummation of a business agreement between CH2M HILL and the company to which this document is submitted.

The data subject to this restriction is contained in all pages of this document.

© 2011 CH2M HILL